BRAZILIAN *BATTLERS'* HOUSING

histories of self-production . histories of social rise

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ABSTRACT

Brazilian *battlers'* housing discusses the self-production of dwellings in the circumstances of the socioeconomic rise of the so-called Brazilian new middle class, occurred on the first decade of the years 2000. *Battlers* are a precarious working class of about 100 million people, who have used their recently increased purchase power to informally solve their private housing demands, planning, building and renovating their homes themselves, with limited technical knowledge and almost no access to formal technicians as for example architects. The result is a mode of housing production, which spreads over the territory in micro-local self-initiatives and informal social practices of construction and management. With the support of a controversial manpower, this practice presents all sorts of technical complications, but at the same time expedient ways of affordability and creative spatial solutions for ordinary constructive problems. Such initiatives have consolidated Brazilian informal settlements and peripheral subdivisions, attending a demand poorly responded by the government. This research recognises the benefits of the self-production, but questions the conditions under which it happens and asks if it really collaborates for a true social rise of those who are engaged in it. With an empirical and qualitative approach and taking dwelling construction processes leaded by *battlers* as main information sources, the academic work responds if and how the socioeconomic rise of the Brazilian *battlers* has exactly affected the self-production of dwellings. For that, *battlers*' self-production of dwellings is analysed and discussed in five main aspects: 1) acquisition of land and real state, 2) building overtime, 3) space and creative power, 4) technical complications and building materials and 5) manpower and know-how.

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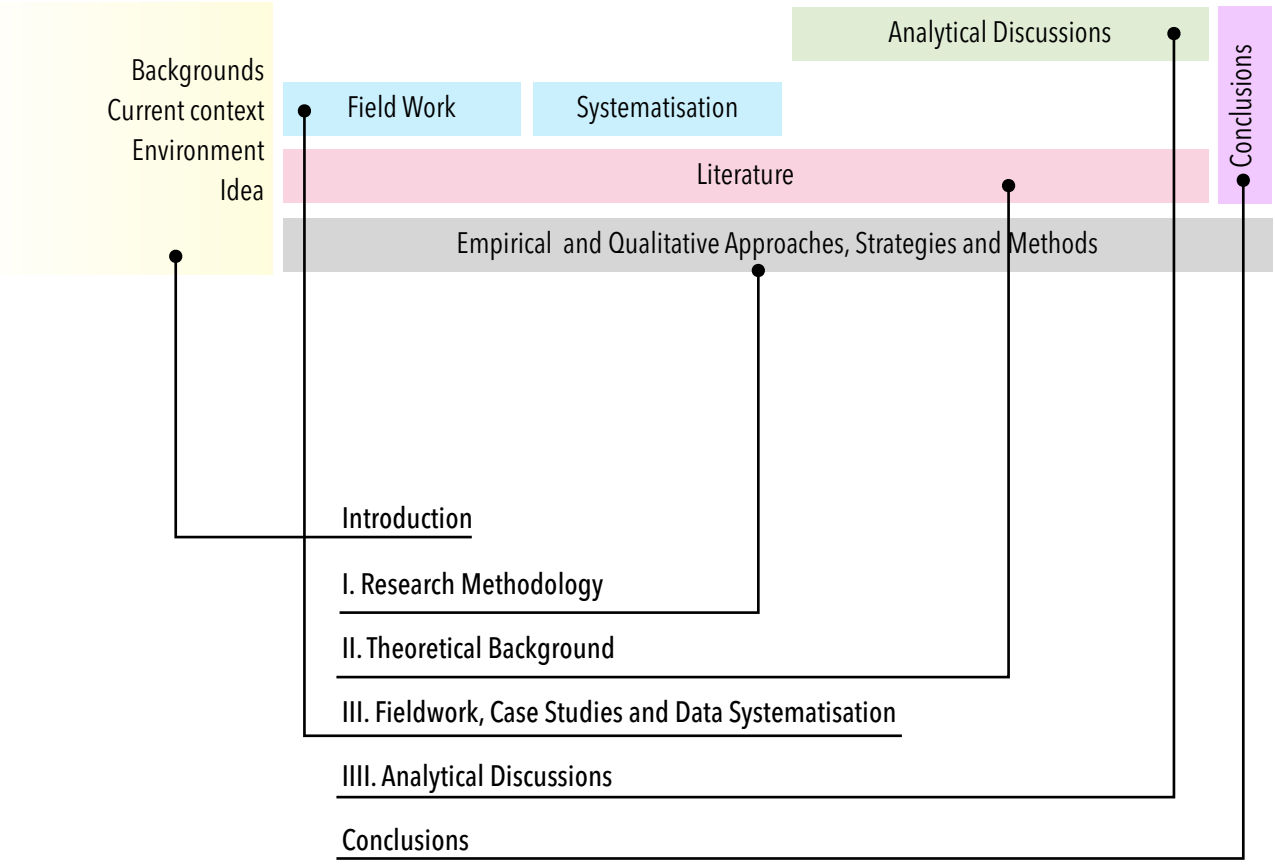
STRUCTURE OF THE THESIS



"The house is the conventional scenario to represent our triumph".

("A casa é o cenário convencional para a representação de seu triunfo").

A produção da casa no Brasil. Sérgio Ferro, 1969.

"(...) we observe that always has been with us - not to discover, much less to invent, but to recognise"

The structure of the ordinary. John Habraken, 2000.

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Introduction

Background

When I was a little girl, my friends and I would walk home from school through a beautiful wide street in my hometown in the countryside of *Minas Gerais*, in southeast Brazil. At that age, between seven and ten years old, the street was for me wide and green, full of life, movement, and beautiful big family houses. I remember being impressed by those elegant buildings, which we could only see from outside. To imagine how they were inside, what their furniture was like and how many rooms they had, was one of our favourite games. Sometimes we would stop for a few minutes by the front gate of one of the houses and invite each other to come inside, as if one of us lived there, just to impress the people passing by. Looking back, it is interesting to recall how housing was always an issue for me. I was very critical of the spaces in my parents' house, built by my great grandfathers sometime back in the 1920s. Even as a child, I used to play architect, drawing plans to change spaces and make them better. I would also cut out and collect small blueprints published in newspapers to advertise new real state enterprises, and to draw on transparent paper the changes I thought necessary to improve the internal partitions of the apartments.

Years later, in the state capital of *Belo Horizonte*, while I was studying architecture, someone told me that the profession we choose might have a deep connection with our inner needs, with problems that we want to solve for ourselves and for others. Well, I now have no doubt about that. After ten years of learning and practicing conventional architecture, working on projects for culture centres, churches, schools, and mansions for a few wealthy clients, I came to change the course of my professional life, and here we are now.

Although I have enjoyed my university time and the profession I have learnt, the architecture I encountered in the university was not what I imagined as a child. I thought I would work for people like my uncles, solving spatial problems and technical defects. But the field of conventional architecture does not deal with the ordinary and simply ignores self-production. Self-production occurs when the construction of a house is managed (and eventually built) by the users themselves, spontaneously, without architects. That is exactly how my original home and those of all my friends and family were built.

In architectural schools, students are trained to design extraordinary buildings by means of a pre-determined programme of needs and the use of specific knowledge and tools. Clients do not actively participate and projects are finished products, instead of processes in which all participants take part. In Brazil, at least, construction and planning are becoming more and more separate and atomised activities. Young architects know more about 3D modelling than about construction. We architects remain as "in-door" professionals, keeping our distance from building sites. Unconsciously trained to work for elites, we rarely work directly for low-income residents or for the poor. These services are only provided through the government or NGOs. It was very frustrating for me to see how often low-income clients who came to our studio simply disappeared after we sent a first version of the contract containing our proposed services and their prices. I began to feel that some things could be done differently, since I was a professional and there was a demand that was not being met. But "popular" clients, who were used to building for themselves, have found the work of an architect complicated and unworthy.

> (...) popular, in its Latin origin, derives from *populous*, which addressed the group of citizens from which were excluded, on the one side, the most privileged, the owners, to whom the

> senate representation was reserved and, on the other side, the unfortunate, the poor, the unpossessed. (...) This definition seems to be extremely up-to-date and adequate: it excludes the architecture made to the elites - so called erudite - and the one from the excluded, for which, in modern usage, the term *favela* and other similar terms have been used (Weimer, 2005, p. XL, my translation).

Motivated by a mix of frustrations and a weird curiosity, I finally started to work with popular clients from the metropolitan area of Belo Horizonte. Mostly accustomed to self-producing their homes, these dwellers informally plan, build and renovate their homes themselves, but with limited technical knowledge and no access to architects, engineers, or other formal technicians. As part of a master's programme at the *Universidade Federal de Minas Gerais,* I began to investigate their self-help practices, developing and applying with them a participative spatial and technical advisory in a project called *Arquitetos da Família*. This research project combined theoretical studies with the development of a different architecture practice, alternative to the conventional one, which should suit popular demands and make architects' work useful, fulfilling the existing gap between low-income dwellers and architects. Given its success, the work involved other architects and continued after this master's project. We worked with more than 50 clients in less than four years, working only part-time on the project [1]. My collection of blueprints and the renovations I imagined for my parents' house emerged from a forgotten world.

From one side, the architects' world includes the production of the architecture field, material and symbolic, and the practices from all engaged professionals from studios, faculties, professional organisations, as well as from satellite fields such decoration and arts, construction and real estate. In Brazil, architects are not seen as ordinary professionals, like technical supporters, mechanics, teachers and even doctors. Architects and civil engineers work according to the conventional process of designing and building, segmented in pre-determined fixed phases. Among many mismatches, this division does not fit the needs of most popular families. More than a matter of price, it is a question of value. On the other side, popular clients barely know what an architect does. They normally do not deal

[1] Moreover, a topic for a design studio at the Architecture School was created and was very well received by the students. Later on, at PUC-MG (*Pontifícia Universidade Católica de Minas Gerais*), I started teaching a topic that was specially addressed to popular demands. We have observed that many architecture students find in this approach a possible career path for themselves, also given their own social backgrounds.

with a dwelling as a finished product and take an active part in the building processes. Architects and popular clients live in two different worlds, the result of two different *modus operandi:*

> While this public expects alternatives to solve relatively simple spatial and constructive issues, architects offer designs based on abstract notions, ranging from stylistic doctrines to metaphors of the literary or philosophical universe. (...) In this sense we refer to two modes of operation: one is based on a theorised and institutionalised practice, whose focus is on design and discourse. The other, much wider, is based on empirical experience and focused on construction and use (Kapp, Nogueira and Baltazar, 2009, p. 5, my translation).

When I look back, I see that the *Arquitetos da Família* have engaged in the pursuit, development and implementation of an alternative architectural practice, whose aim was to solve a problem of the architects and their field but not to respond to a housing demand coming from common citizens. Architects have been historically trained to serve the formal cycle of the construction industry and consequently are not equipped to provide technical instructions for self-built small additions and technical defects, which would demand from them another professional *habitus;* for example, the ability to reduce the use of codes and symbols in the drawings, to elaborate flexible procedures and open-decision plans, and to invent ways of reducing the costs without sacrificing quality (Nogueira, 2010).

Brazil has 466 architecture faculties and 83,754 architects (ABEA, 2015; CAU/BR, 2012) [2] and a housing deficit of more than five million dwellings, of which approximately more than two million are the result of the excessive duty on rent. It would be coherent and of great value if more architects could work for those in need of housing (FJP, 2015)[3]. As explained in the previous paragraphs, a great barrier to that

[2] In a survey conducted in 2012 by the Brazilian Architecture and Urbanism Council (CAU - *Conselho de Arquitetura e Urbanismo*), 50.2% of the interviewed architects claimed that the biggest obstacle to their careers was the lack of recognition from society. In second place, the greatest obstacle was low remuneration, according to 32.7% of the informants. Lack of access to the working market represented only 10.38% of the answers (CAU, 2012).

[3] In the composition of the Brazilian housing deficit in urban areas from 2012, the excessive burden on rent is the item of greatest weight, accounting for 2,310,642 units or 42.5% of the deficit; followed by cohabitation with 1,617,671 households, or 34.4%; poor housing with 374,359 units or 16.3%; and increased density in rented households with 361,441 households or 6.8% of the total housing deficit (FJP, 2015).

objective is the lack of training and a different repertoire of architectural practices adequate to meet popular demands. The investigation and the later work of the *Arquitetos da Família* have proved that those specific barriers can be overcome.

In spite of the great value of the described experience, today I see it with restrictions. An adequate architecture practice cannot, alone, guarantee technical and space quality for self-production. There are other factors that surround the encounter of popular clients with architects, and of self-production with architecture, which are more decisive for the quality of the space. Self-production is multifaceted, and has many more hidden sides to be unveiled, for us to really comprehend what is going on inside there. Therefore, before proposing new design methods, building technologies or up-to-date cooperative ways of working, it is extremely necessary to get to know and to understand in detail how popular self-producers have been planning and building. My proposition is to walk one step back and to critically observe them. As Habraken (2000) suggests when he writes about the ordinary built environment, we do not really know how others live.

PROBLEM + CONTEXT + RESEARCH QUESTION

The work with *Arquitetos da Família* has turned my attention to the popular audience, who, although accustomed to self-produce, started to consume more than before and to consider the possibility of hiring architects for domestic housing demands - the addition of a room, the choosing of adequate tiles, the renovation of a façade, or the change of a roof. These popular clients were actually part of the acclaimed "Brazilian new middle class", a sizable social group which was no longer poor. They have economically risen, given the improvement of their purchase power, and could now buy all sorts of consumer goods and services, from mobile phones to building materials. In spite of that, in order to achieve and maintain this relative social rise, those individuals still have to

> (...) work 10 to 14 hours a day, have two or more jobs, study at night, work during the day and live to work and to consume what before they could not. They have little embodied cultural capital, making their lifestyle and consumption patterns essentially different from the established middle class (Bava, S. 2010. Interview with Souza to Le Monde Diplomatique Brasil, my translation).

In this sense, the so-called Brazilian new middle class is actually a new precarious working class, eager to consume what they could not before. I prefer to call them *battlers*, borrowing the provocative term from the Brazilian sociologist Jessé Souza (2010). The term is more adequate to characterise the new social group that has worked extremely hard to provide themselves with better housing conditions, mainly through self- production.

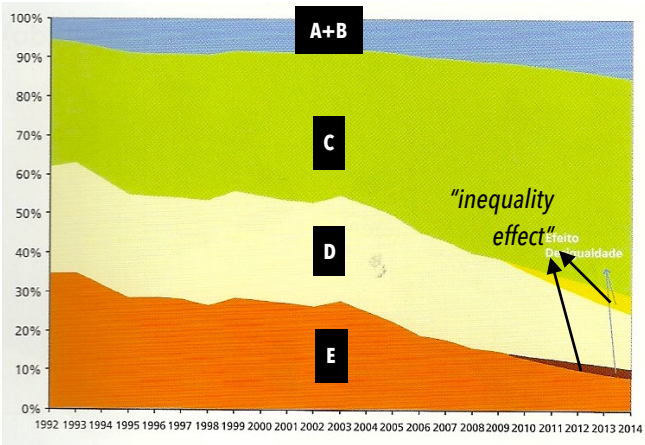
Economic Layers according to total family income*

	R$	€
A B	> 5.174	>2.121
C	1.200 - 5.174	492 - 2.121
D	751 - 1200	308 - 492
E	< 751	< 308

*values from 2011. To check current values, http://fxtop.com/en/currency-converter-past.php

Neri, 2011, p. 82, my translation.

A good indicator of how significant *battlers are* for Brazilian society is the relation between income and population. Among economists, *battlers* are known as the so-called "class C", presenting a monthly family income of between about €492 and €2,121 (please see table besides) (Neri, 2011, p. 82). Between 2003 to 2011, about 39.6 million Brazilians had migrated to class C, coming from classes D (monthly family income between about €308 and €492) and E (the poorest, with monthly family income up to about €308). In 2011, more than half of all Brazilians belonged to this lower middle group (50.05%), about 100.5 million people (Neri, 2011, p. 27).



Distribution of population according to income levels. The areas indicated with arrows demonstrate the amount of people who have migrated from classes E and D to D and C, called by the author as "inequality effect". Neri, 2011, p. 294.

This economic rise resulted, to some extent, in social gains. From the end of the 90s there was an economic environment which supported the creation of new jobs and protected the minimum wage, together with the enlargement and implementation of social programmes whose base is the income transference to the poor. Nevertheless, *battlers* can basically rely on their own workforce, since they do not have the privileges common to the Brazilian traditional middle classes. *Battlers* began to be able to afford a wider range of consumer goods, which include (beyond domestic items) better educational opportunities in private schools and private universities; safer health care services, all of them private; private cars and motorbikes, to avoid public transportation; and of course - real estate, building materials, and services to improve their dwellings themselves.

The situation in Brazil is that, without money, there are no social achievements, since Brazilian public services did not improve at the same pace. Therefore, for *battlers*, self-production remains the most expedient way to access affordable housing.

Self-production happens when the building process is conducted by dwellers themselves. They do not necessarily contribute with manual labour, but manage and afford all the necessary resources - from the acquisition of land and building materials to the remuneration of the manpower. Self-producers do not rely on architects, engineers or other formal technicians, and take all spatial, technical and administrative decisions alone or sometimes with the help of the construction workers they informally hire. Plans are also informally made, and rarely put on paper.

> Usually these self-production processes focus primarily on the very decision making process, which simultaneously happens with the processes of acquiring knowledge, articulating power and building (...) instead of the traditional focus on conventional results and technical features due to formal architectural practices (Baltazar dos Santos and Kapp, 2007, p. 1).

Architects, as previously explained, are professionals who typically work for the elites. Although Brazilian *battlers* show higher incomes than 20 years before and can afford more and more consumer items, to pay for the services of an architect is still something new, something which *battlers* are not used to. To deal with an architectural project is not part of the repertoire of their social practices, typical from their *habitus* (Bourdieu, 1984)[4].

Taking Belo Horizonte as an example of a Brazilian metropolis, most *battlers* reside in the following urban environments:

- collective housing enterprises, mostly apartment blocks, built by construction companies in conventional building processes. These enterprises include social housing, where the apartments are provided by the state to families in extreme need of housing and by popular enterprises, produced

[4] The concept of *habitus* will be discussed in the Part II, page 103.

by the private sector. In this case, apartments are rented or purchased by the families through long-term bank loans;

- middle-size peripheral formal subdivisions. Although part of the formal city, dwellings are informally built in typical self-production processes. Dwellings remain irregular, since few are approved by the municipality, which is not able to control and check all informal constructions. Plots are often re-divided among more than one family who negotiate and manage access and space;

- consolidated settlements. These are *favelas,* whose occupation started around the 1940s. They are normally well-integrated with the formal city. The dwellings' production happens similarly to peripheral subdivisions.

Given *battlers*' income increase and their relative social rise, the self-production of dwellings has consolidated a large proportion of Brazilian outskirts and *favelas*, despite all the difficulties faced by *battler self-producers* in their everyday lives. They have responded to a demand poorly addressed by governments, which have not been able to deal with or to control the informal growth of cities. The problem is that, notwithstanding the extremely useful and creative spatial solutions and intelligent time schedules, there is a massive waste of economic and non-economic resources, precarious building conditions, and the silent aggravation of local urban problems, like privacy, security, drainage and thermal comfort. Although basic infrastructure conditions have improved, building densities are high and public spaces and green areas are few. Peripheral neighbourhoods look like storages of manpower - people who live to work in order to be able to consume and build what they could not before (Nogueira, 2015). Although self-production has provided dwellings for about 70% of Brazilian households (*Ministério das Cidades*, 2009), a number of administrative and technical problems are taken for granted by dwellers, who have made an immeasurable effort to build their homes, to the detriment of their collective and individual needs.

We cannot deny the advantages of this type of housing production. But, as previously mentioned, self-production is a multifaceted process that also presents problems. Both the advantages and the problems will be critically discussed in this work, examining the scenario of the socioeconomic rise of Brazil and of the Brazilian *battlers* up until 2012. Given that context, the research explores **if and how**

the socioeconomic rise of the Brazilian *battlers* has exactly affected the self-production of dwellings. For that, the research examines:

- the main ways for acquisition of empty plots for new constructions;
- the feasibility of building processes;
- spatial solutions;
- technical aspects and building materials;
- the manpower in charge and their level of knowledge.

Because of my previous experiences as a researcher and as an architect in the area, I have chosen the metropolitan Belo Horizonte as the framework for this research. The fieldwork took place in some of its consolidated *favelas*, peripheral subdivisions, and collective housing enterprises. Some researchers reaffirm that the state of Minas Gerais offers a kind of ideal sampling of the country, given the diversity of the socioeconomic conditions of its population (Neri, 2011). Minas Gerais includes the development from the "Belgian side" as well as the poverty from the "Indian side" of the Brazilian "*Belíndia*" (Neri, 2011, p. 19).

The timeline of the research ends at the end of 2013, when the fieldwork was performed. Estimations, historical information and statistical data presented here are current through 2017.

Relevance

According to estimations from the United Nations, the urban population from developing countries will almost double from 2011 to 2050. By that time their population will be more than five billion people (UN, 2012, cited in Bredenoord & van Lindert, 2014, p. 57). The rise of "new middle classes" is a parallel global phenomenon which extends beyond Brazil. Because of the fast growth of emerging economies, it is estimated that by 2030 there will be about 2.7 billion new middle- class consumers[5] (Brandi and Büge, 2014). At this stage, there will be about one-and-a-half billion dwellings lacking decent conditions all over the world. (UN-HABITAT, 2016, p. 48).

[5] "By 2020 (emerging economies) will represent two-thirds of the global middle class and more than three fourths by 2030" (Brandi and Bagel, 2014, p. 6).

The Brazilian case is particularly interesting because, on the one hand, unlike other emerging economies such as China or India, where social inequality is on the rise, in Brazil it has decreased. In recent years, Brazilian economic growth -- at least until 2011 -- seems to be comparatively less harmful [6] (OCDE, 2010, cited in Neri, 2011, p.23). On the other hand, it has been estimated that the expenses of the *battlers* in consumer items totalled approximately €240 billion between 2008 and 2011 (*A nova classe trabalhadora*, 2015). A major part of such expenses was driven by informal practices, such as domestic construction demands and renovations.

The rise of the Brazilian new middle class merited special attention by the national and international media, especially between 2009 and 2012. Even television channels clearly adjusted their programming to a different aesthetic taste. The leading characters of the famous Brazilian soap operas were no longer rich businessmen or elegant professionals like architects from the South Zone of Rio de Janeiro. The television heroes became hair dressers, small entrepreneurs and manicurists from the peripheries and *favelas*. Viewers began to recognise themselves on TV, no longer in secondary roles as the housemaid or the baby sitter, but as principal characters. More than once I saw people renovating their homes, copying what they saw on recent TV shows in which the main characters were "normal people" very much like themselves. As we can observe, this is also an issue about self-esteem and about access[7].

In Brazil, the provision of decent housing strongly depends on the improvement of the existing housing stock. In 2012, there were 10.32 million inadequate dwellings (18.7% of the households) in Brazil (FJP, 2015)[8]. However, it was already proved that the conventional models of designing and building in architecture and construction do not fit most of popular demands (Nogueira, 2010; Samuel,

[6] During the first decade of this millennium, the annual per capita income increase of the Brazilian poorest was higher than that of the Brazilian richest (6.3% for the poor and 1.7% for the rich). The situation is inverse in China (8.5% for the poor and 15.1% for the rich) and in India (1.0% and 2.8%) (OCDE, 2010, cited in Neri, 2011, p.23).

[7] Adorno and Horkheimer (1985) describe how the cultural industry always finds ways to model the life of spectators and to dictate how people should behave. In Brazil, TV plays a fundamental role in the formation of the society, since it remains the main source of information for many. It clearly makes a good use of society's changes and has the power to select what it wants to encourage according to other interests. *Battlers* are a great consumer audience that television entrepreneurs would never want to lose.

[8] Inadequacy regards specific aspects of dwellings which affect the quality of life of residents. Inadequate households are those that lack infrastructure, are excessively crowded, with problems of land tenure, inadequate roofing, with no private toilet, and those with a high degree of depreciation (FJP, 2015).

2008). Given the increase of a low-income population in need of technical advisory, the distance between lower income groups and architects tends to decrease and architects will have to pay more attention to filling the gap between their working practices and people's demands. Because of that, it is possible that very soon architects will systematically start looking for different working methods and to work with popular clients.

On the one side, self-help initiatives on housing depend to a large extent on the earning capacity of households and on the purchasing power of families. On the other, Brazilians must continue self-producing in order to have access to housing. Accordingly, Brazilian human development, and the consequent permanence of Brazil among the promising emergent economies, depends on self-production, despite all its problems and difficulties.

AIMS OF THE RESEARCH

The research's ambition is to provide a critical panorama on how Brazilian *battlers* have self-produced their homes, through the history of dwellings, as told by *battlers* themselves. In addition to being an academic exercise, the idea is to offer an informative text that can be understood by non-architects and lay people. In this sense, this research expects to:

- inspire researchers from other emerging nations to investigate how their own *battlers* reside. Architects and urban planners have not paid enough attention to these emergent social groups, which are and will be more and more in need of decent housing. Real estate investors see these people simply as profit-making opportunities. It is critically important that alternative initiatives on housing "arrive there first", providing both quality and economy for the dweller, and making good use of local practices.

- recommend universities, development agencies and the local private sector to research and develop practices and services that meet the housing demands of popular groups. There is a vast bibliography on *favelas* and on affordable housing, but relatively few of them question the role of architects on changing the current situation. Generally, *favelas* have received a lot of attention as an academic topic, but are still seen as exotic and improvised, while formal peripheral neighbourhoods remain

invisible. In comparison with the existent demand in Brazil, there are few initiatives adequate for this audience.

- motivate architects, civil engineers and city planners to adjust their working practices according to popular demands. The work of *Arquitectos de la Comunidad* in Cuba and in Argentina (Livingston, 2006; Diaz, 2002) and the later work of the *Arquitetos da Família* in Belo Horizonte, Brazil, were demonstrations of an adjustment in the architect's practice. Although inspiring, they cannot guarantee space quality alone. If more new initiatives and models of working practice were tested, the more advanced we would be.

- encourage governments to develop housing programs addressed to protect and support self-production, considering all the advantages it presents. This research proves that self-producers have a fantastic potential of engagement, but they need technical support. Since governments have already taken self-production for granted, it would be desirable to systematically support this production, providing and encouraging easy and fair access to credit, technical advisory and the use of sustainable building materials and construction techniques.

Presentation of the Thesis

Besides the introduction, conclusions and bibliography, this doctoral thesis is divided into four main parts. Part I explains the research methodology. Basically, Parts II, III and IIII ("Theoretical Background", "Fieldwork, Case Studies and Data Systematisation" and "Analytical Discussions") consist of the theoretical, the practical and the analytical parts of the thesis. In the middle of the Dissertation, between Part III and Part IIII, is located the "Appendix", where the reader can find quick access to all relevant practical information about each case study, including photos and statistics, produced during the research.

Within the text, all illustrations, tables and graphics without indication of source were elaborated by the author. Footnotes are numbered by part.

Parts of the Thesis

Introduction	
I. **Research Methodology**	As the research methodology played a fundamental role for the presented discussions, one complete part is dedicated to describing how the research process was organised and which research tools were used - 1 Approaches, 2 Strategies and 3 Methods.
II. **Theoretical Background**	The literature is organised into four sections. The first one (1 Who is *Brasil*?) introduces basic concepts about how Brazilian social inequality began and Brazil's international role as an emerging global economy. The second (2 Informality and irregularity) defines informality and irregularity for this context and relates the urban informality, as a product of globalisation, to self-production. The third (3 Self-production - what it is, how does it happen and why?) explains in detail what self-production is and under which conditions it happens, reviewing the terminology on the topic, establishing and systematising the concept. The fourth and last section (4 Self-producers as *battlers*) relates to self-production as a social practice typical of Brazilian *battlers* and critically explains the socioeconomic rise of the social group.
III. **Fieldwork, Case Studies and Data Systematisation**	The third part of the thesis describes the empirical stage of the research. It is comprised of three sections. The first, 1 Fieldwork, encompasses the definition of research objects and the identification of samples. The second, 2 Case Studies, describes case studies regarding neighbourhoods, the socioeconomic condition of respondents and how they came to become self-producers. The third, 3 Systematisation, provides information as to how the data acquired in the field was systematised, as well as some general impressions about the field incursion and the decoding of the information.
IIII. **Analytical Discussions**	The fourth part of the thesis is the analytical discussion. It presents how the socioeconomic rise of *battlers* has influenced the socio-spatial configuration of dwellings and of their local surroundings, through a deep examination of the case studies. This part is elaborated on with the theoretical support of the second part together with the empirical experiences described in the third one. The analytical part is then divided in five sections, regarding Acquisitions (1), Building overtime (2), Spatial aspects (3), Technical aspects and building materials (4) and Manpower and know-how (5).
Conclusions	
Bibliography	

I

Research Methodology

1 Approach - Empirical and Qualitative - and Research Parts

In order to unveil how Brazilian *battlers*' house, the research's main focus are the histories of people, through their self-production processes.

This PhD research is **a small-scale study, oriented primarily by empirical information and the qualitative use of data.** For that, the work is strongly based on local and direct observations and personal experiences from informants. Theoretical studies and quantitative information play an important role, but are not the core of the research. They "enrich and facilitate the corroboration of some interpretations of the historical process and can lead to a greater degree of reliability of certain conclusions drawn" (Campos, 2015, p. 148, in Bond). So, their role is to support analytical discussions, providing firm explanations and solid, trustworthy arguments. In this particular case, quantitative data do not reflect people's actions, which change the urban environment very rapidly, in a way that the periodicity of the surveys is insufficient to capture accurately.

In this sense, the literature review had two moments. The idea was to initiate with the basic, only focused on the two central topics of the research (self-production and the rise of Brazilian new middle class), and to go straight to the fieldwork, the core of the research. The experiences in the field and the decoding of information called attention to the need for the inclusion of other literature references, necessary for a more comprehensive analysis. The research was structured in seven parts, as presented below. The same colours indicate that the events have taken place simultaneously.

Description of Research Parts

1	**Literature Review I: main topics**	Focused on local (Brazilian) literature about the *Brazilian new middle class* and *self-production*. This part covers the literature on the two topics, trying to find a connection point between them.
2	**Fieldwork**	During March-November 2013, ten peripheral neighbourhoods and four *favelas* were chosen as fieldwork sites across Belo Horizonte's metropolitan area. These sites gave access to a remarkable source of primary information. 23 dwellings distributed in five clusters were investigated, and additionally another 12, resulting in 35 samples. 50 documented meetings yielded more than one-thousand photos and one-hundred videos, besides an unaccountable number of notes and sketches.
3	**Decoding / Systematisation of Data**	First, the information obtained from the fieldwork was analysed in general terms. Second, some samples were chosen to be taken as case studies. Then, the information from the case studies was "threshed" among different topics, which were categorised and then grouped, detached from their original household, so that we had a general view of each topic (independent of the informant). Afterwards, the topics were again re-grouped into five main issues for analysis - 1) Acquisitions; 2) Building overtime; 3) Manpower and know-how; 4) Spatial aspects and 5) Technical aspects.
4	**Literature Review II: satellite topics**	The empirical experiences in the field and the decoding of data called attention to other satellite topics, necessary to critically complement the investigation. The literature review was widened and included more international references.
5	**Critical Analysis**	This combined theoretical sources and statistical data with the decoded fieldwork data to interpret, to discuss and to describe in detail how Brazilian *battlers* have self-produced their dwellings, using their socioeconomic conditions as background. This part is divided into four analytical discussions: 1) Acquisitions; 2) Building overtime; 3) Manpower and know-how; 4) Spatial aspects; and 5) Technical aspects.
6	**Conclusions**	The focus was to determine if and exactly how the socioeconomic rise of the Brazilian *battlers* has affected the self-production of dwellings. Other closing arguments and recommendations for future investigations are also included.
7	**Final version**	Elaboration of the final version of the thesis.

As we can see, there is a structural correspondence between how the **research** was organised and the structure of the **thesis**:

Correspondence Research Parts and Parts of the Thesis

Research part	Correspondent Thesis' Part
1. Literature Review I: main topics	Introduction Part II- Theoretical Background
2. Fieldwork	Part II - Research Methodology Part III - Fieldwork, Case Studies and Data Systematisation
3. Decoding / Systematisation of Data	Part II - Research Methodology Part III - Fieldwork, Case Studies and Data Systematisation
4. Literature Review II: satellite topics	Introduction Part II - Theoretical Background
5. Critical Analysis	Part IIII - Analytical Discussions
6. Conclusions	Conclusions
7. Final version	All Parts, Introduction, Conclusions and References

The research employs three methodological tools - *Approaches, Strategies and Methods* (Descombe, 2003). *Approach* is broader in scope and defines the general guidelines for dealing with a research problem or a situation. In this case, the adopted approach was *empirical and qualitative,* relying very much on the fieldwork. Research strategies are plans of action to achieve a given aim. I did not restrict the use of one single strategy, but I combined interesting aspects from different research strategies - *Surveys*, *Case Studies* and *Grounded Theory*. *Methods* are systematic procedures to be used in order to gather as much information as possible. From this perspective, I adopted two methods in the field, *Unstructured Interviews* and *Participative Observation*.

Methodological Tools for Research

Approach	general guidelines on how to deal with a problem or a situation	Empirical and qualitative	
Strategy	plans of action to achieve a given aim	Surveys	Snow-ball
			Cluster sampling
		Case Studies	
		Grounded Theory	

Method	systematic procedures to be used in order to gather as much information as possible	Unstructured interviews
		Oral History
		*El Metodo**
		Participative Observation

* in English, The Method.

As this investigation strongly depended on empirical and intense fieldwork, the choice of informants and the quality of information coming from them played a very important role. The use of diverse research approaches and methods, rather than a single one, allowed me to look at the topic from different points of view, since each research strategy and method emphasises or sheds light on different aspects of the same topic. In this sense, the fieldwork was a dialectic exercise, not governed by logic, which permits us to see many sides of the same topic while also highlighting its contradictions.

Thus, the research aims to present a comprehensive perspective about the self-production made by Brazilian *battlers*, considering the socioeconomic conditions of people as great influencers on building processes. As mentioned in the Introduction, the timeline of the research concludes at the end of 2013 when the fieldwork took place.

2 Strategies - Surveys, Case Studies and Grounded Theory

The research **strategies** used in this work are not restricted to only one type. Taking into account that "there are some strategies which are better suited than others for tackling specific issues" (Descombe, 2003, p. 3), I combined aspects from three research strategies: **Surveys, Case Studies and Grounded Theory.**

2.1 Surveys

The concept of a survey (Descombe, 2003, p. 6-29) is normally attached to a wide quantitative investigation, very common in biological and medical studies, or in classical geographical surveys that map landscapes and territories. Nevertheless, surveys can entail any type of research which looks closely and examines phenomena, people or things through a given sampling of units. Social surveys, in particular, may provide a snapshot of how things are in a given period of time and bring the idea of empirical research: "getting out of the chair, going out of the office and purposefully seeking the necessary information 'out there'" (Descombe, 2003, p. 6). Surveys allow the researcher to use a wide range of methods, depending on the kind of data the researcher aims to deal with. Although this study covers only 35 samples out of millions of self-produced dwellings, some aspects of surveys, especially some sampling techniques, proved to be quite suitable to the task.

The very common literature review is a kind of document survey. Observation is also a kind of survey, although less common, which deals with any event or thing that can be observed by a researcher:

> "(...) the survey strategy can use a range of specific methods to collect data and that we should not get hung up on the idea of a social survey as meaning the same thing as a postal questionnaire survey. As well as asking people what they do and what they think, surveys can also look at what they actually do" (Descombe, 2003, p. 11).

Surveys use samples to collect information. In small-scale researches, the number of samples can vary from 30 to 250 cases. Samples serve as a small portion of the whole, but not as a generalisation. I agree with Descombe that "it is not good enough, though, to assume that findings for the sample will be replicated in the rest of the population" (Descombe, 2003, p. 11). Nevertheless, I decided to maintain

surveys as one of the research strategies because of two sampling techniques I found suitable for this research: snowball sampling and cluster sampling. Both were fundamental to reach the right informants and to organise the research objects according to the research's needs.

- Survey technique: Snow-ball Sampling

Snowball sampling is a very effective strategy for obtaining samples "through references from one person to the next" (Descombe, 2003, p. 16):

> Each can be asked to nominate two other people who would be relevant for the purposes of the research. These nominations are then contacted and, it is hoped, included in the sample. The sample thus snowballs in size as each of the nominees is asked, in turn, to nominate two or more further persons who might be included in the sample. (Descombe, 2003, p. 16)

As we can observe in the *Sampling Overview* on page 128, from 34 fieldwork samples (32 informants), 15 were found because they were recommended by the initial informants. This gives legitimacy to the research and has made it quite easy to contact new people, not least because the informants belong to the same social group.

- Survey technique: Cluster Sampling

Cluster Sampling is a method of gathering informants in a same area, originally with the aim of saving time and expense.

> The logic behind it is that, in reality, it is possible to get a good enough sample by focusing on a naturally occurring cluster of the particular thing that the researcher wishes to study. (Descombe, 2003, p. 14)

In this case, the idea of using clusters had more to do with the opportunity to study the interferences of one dwelling on the other, and the relationships among neighbours. My objective was to use the Cluster Sampling as much as possible, but unfortunately this was not always feasible. Although the snowball effect helped to gather neighbours, only some of them agreed to participate in the research. As we can see in the *Sampling Overview,* I was able to set up three clusters, with 13 dwellings in total.

The combined use of snowball sampling and cluster sampling was helpful to identify the right fieldwork spots. From them, I chose a smaller group to examine in detail the case studies for this research.

2.2 Case Studies

In contrast to a mass study, the use of case studies allows the researcher "to illuminate the general by looking at the particular" (Descombe, 2003, p. 30). So my idea was to formulate a research strategy using a combination of a case study strategy and the survey strategy.

The case study approach fit in with the aims of this research in the sense that it allowed me to examine things in detail - in an "in-depth" investigation. I believed that Brazilian housing self-production deserved (and still deserves) more attentive studies to discover the many factors and hidden details necessary to gain a real understanding of a such a *taken-for-granted* phenomenon. Normally, the case study strategy focuses on relationships and processes, which is precisely what defines self-production. Houses are not finished or ready products, but for self-producers, processes that emerge from relationships: "To understand one thing it is necessary to understand many others and, crucially, how the various parts are linked". (Descombe, 2003, p. 31) The use of case studies demands from the researcher a broad overview of an issue and an effort to relate that issue with other aspects present in other cases. This strategy also allows for the combining of different methods and sources which are relevant to the research, since the data collected comes in different forms. "Whatever is appropriate can be used for investigation of the relationships and processes which are of interest" (Descombe, 2003, p. 31).

> Case studies focus on one instance (or a few instances) of a particular phenomenon with a view to providing an in-depth account of events, relationships, experiences or processes occurring in that particular instance (...) The logic being invoked here is that the particular case is similar in crucial respects with the others that might have been chosen, and that the findings from the case study are therefore likely to apply elsewhere (Descombe, 2003, p. 32-33).

Case studies do not represent the whole, but each case presents aspects of situations that are typical: "A case study is a single example of a broader class of things" (Descombe, 2003, p. 36).

Battler families are typically very heterogeneous, and their processes of self-building their homes take place in many different ways, when we look closely at them. This heterogeneity does not make them different from one another, but in fact is evidence of their similarity. Where they are different is in how they choose to deal with a common problem they all have to solve -- the shortage of access to housing. So, while the 35 samples may not represent the experiences of all the Brazilian families who self-produce their dwellings, significant aspects of this type of housing production are typical and deserve to be uncovered, studied in detail, and exposed.

2.3 GROUNDED THEORY

An interesting research strategy for topics rarely explored or relatively ignored in the literature is the Grounded Theory. Instead of considering theories present in the literature as the fundamental part of the work, the Grounded Theory looks for explanations in the research objects themselves. It has become popular among social researchers lately, mainly in small-scale projects and in qualitative research. The approach originated from the studies of Barney Glaser and Anselm Strauss (2012) in the late 60s. Since then, the use of the Grounded Theory and its meaning has varied among different researchers with different purposes. The principles of the Grounded Theory fit with this research because they are efficient and at the same time relatively flexible, able to deal with possible difficulties and surprises of qualitative and empirical approaches (Bryant, 2007).

Certain ideas of the Grounded Theory were very welcoming while developing the strategy for this investigation. The main idea is the emphasis and trust in the fieldwork and the "need to link any explanations very closely to what happens in practical situations in 'the real world'" (Descombe, 2003, p. 110). Another idea derived from the Grounded Theory is the capability of generating theories *from* the data, instead of testing or confirming theories *with* the data. Relying on such principles, the fieldwork then becomes the core of the research. This should be its starting point, as it was for this study, and should be the fundamental part of the research. As previously explained, the main source of information for this investigation was not the literature, although it had its role, but information gleaned from the samples. To embark on the fieldwork, having in mind that it is your main source of data and knowledge, creates a "trail of discovery". To follow this trail with confidence, it is essential to

have an open mind, to give space to the emergence of the unexpected, and not to conduct the results of the analysis to match previously known theories. The Grounded Theory has a deep exploratory character, suits the study of concrete practices, and focuses on the participants' points of view about a given situation:

> …a good theory is one that will be practical and useful in the course of daily events, not only to the social scientists, but also to laymen. In a sense, a test of a good theory is whether or not it works 'on the ground' (Locke, 2001 in Descombe, 2003, p. 112).

Thus, the use of surveys, case studies and the Grounded Theory were important sources of inspiration to establish a consistent research strategy. As we shall see, I did not apply or follow all the principles of one or the other, but I tried to combine aspects of all three, depending on the stage of the research and on what I needed from each stage.

3 METHODS

Inspired by aspects from the three above-mentioned research strategies, the research methods I chose for this study were *Unstructured Interviews, Oral History, El Metodo - Estrategias para escuchar and Participative Observation.*

Rather than relying on open-ended or fixed-choice answers, I decided to use unstructured interviews, which took the form of conversations and field notes, instead of observations based on tick-box questionnaires. This choice allowed me to explore the methods of oral history, of participative observation *in loco,* and of a special training for listening to others in the field. Combining these possibilities, I could look at each situation from a different angle - through the expressions and words of the dweller, through my own observations of the places, and also of the people I was talking to. Multiple methods produce different kinds of data on the same topic and "allow the findings of one method to be checked against the findings from another" (Descombe, 2003, p. 133).

3.1 UNSTRUCTURED INTERVIEWS

Interviews are a very practical research method, since they do not require a complex apparatus. They depend a lot on the ability of the researcher who is conducting the interview. My early experiences with the *Arquitetos da Família* (mentioned in the Introduction of the thesis) and with previous researches developed in the *Grupo MOM* prepared me well for this task. The ease of conducting an interview or a conversation, as I prefer to define my encounters with self-producer *battlers,* comes from technique more than from talent. As this research deals with low-income dwellers, who are not used to any kind of formalities, I found it more suitable to use unstructured interviews as a research method.

In any type of interview, there must be consent of the participants. They must know and agree that that interview or conversation they have with the researcher will be used for a specific purpose in a certain way, either through transcriptions or audio records. The researcher must have some control of the conversation, which will vary according to the style and the interests of the researcher.

Interviews are adequate for this research because they provide detailed information which comes directly from the participants. Inspired by the principles of the Grounded Theory, the collection of data in a raw state is something permitted by interviews. The type of interview also plays a role, because it

directly influences the types of answers received. In this case, the interviews were conducted more like conversations. This does not mean I had no control of the content, but tells us about the style I intentionally adopted with informants. The emphasis of this type of interview is placed on the informants' thoughts. The interviewer should not talk much, but just start "the ball rolling by introducing a theme" and then simply allow people to speak freely. This was particularly important, since I am an architect. If I had interfered too much, the informants could have been embarrassed to candidly describe their experiences as self-producers. "Allowing interviewees to 'speak their minds' is a better way of discovering things about complex issues (...)" (Descombe, 2003, p. 167). More details about how I conducted the conversations will be explained later in Part III - Fieldwork, Case Studies and Systematisation.

3.2 Oral History

The use of unstructured interviews also allowed for the use of oral history - an additional method for qualitative or open-ended interviews. Oral history is very common among anthropologists, who have used this method to access lifestyles and knowledge from people living in field sites. Oral history is now a multidisciplinary method used in social sciences, cultural studies and gender studies (Leavy, 2011).

> "Oral history is a method of collecting narratives from individuals for the purpose of research. (...) Oral history relies on a highly inductive (open-ended) interview format. No two interviews are the same. (...) oral history positions the researcher and participant in a collaborative relationship." (Leavy, 2011, p. 8)

As a qualitative interview method, oral history gathers data directly from individuals, covering their personal experiences, memories of events, attitudes, values, beliefs, opinions, preferences, conditions, perspectives, and dreams. Self-production is comprised of all of these elements. It is not a product, but a process that happens and depends on people's values, beliefs, preferences, conditions, etc. Normally, oral history interviews include several sessions with the participants. However, because of time constraints, it was possible to talk to some participants only once.

3.3 *El Metodo* - Estrategias para escuchar

Another interview technique which had a great influence on my approach during the fieldwork was inspired by the work of the Argentine architect Rodolfo Livingston in his polemical working method in

architecture - *El Metodo* (Livingston, 2006). I will not go into detail here about the whole method, because its focus is to establish a different architecture practice, alternative to the conventional one (Livingston, 2006). I studied this method extensively during my master's studies in order to develop an architectural practice suitable for popular clients, as I have explained in the Introduction. One of the most important lessons I have learnt from Livingston was about listening[1]. Livingston develops a specific procedure to educate the architect to listen to clients, called *Estrategias para escuchar* (Strategies to listen to). This method helps us to contain our planner's impetus on taking decisions and solving problems before carefully listening to people's demands. Some of the techniques Livingston developed were perfectly applicable to the interviews for this research. The first one[2] is to let people speak and to interfere only if people stray too far from the original topic. The architect (or the researcher) should be able to kindly steer the client (or the informant) back to the original issue. The second technique[3], which supports the first one, is to have a list of topics to be discussed. The interviewer should check to ensure that all topics were covered by the conversation. The third and most effective technique is to be totally concentrated on what people are saying[4]. This means that while people are speaking the listener should not be doing something else, such as taking notes or sketching. To listen to people means to look into people's eyes, to observe their gestures and facial expressions, to follow their thoughts, and to dive into their own world. That is why I decided to audio record the meetings and not to take notes in the meantime. Only later, when I was observing the places on my own, walking through the sites, did I begin to take notes, to record videos with and without the informants, to take photos, and to draw. By the end of the fieldwork I had many different kinds of *media* storing

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[1] His main proposition to start an architectural project and to conduct a successful process is to listen carefully to the clients, in order to understand what they really need. According to Livingston, architects do not know how to listen because we were not trained to do that. We are more used to acting as a kind of autonomous artist, who takes good care of the project as a masterpiece, many times forgetting about the needs, limitations and desires of those who will use it in the real life.

[2] This is the one of the main principles of *El Metodo*, which should be applied during every first interview between architects and clients.

[3] This technique is a variation of how Livingston approaches the clients during the first phone call between architect and client, normally when the client wants to schedule an appointment with the architect. Livingston defends the idea that some questions must be asked before scheduling a meeting. Those questions can be asked and answered inside a conversation, in a kind way, and not all in sequence as in a questionnaire.

[4] This practice is present during all the steps of *El Metodo*, and not only during the first interview. He specially recommends that for the visit to the clients' plot, the visit should follow a rigid sequence of steps, which vary from only visual observation to sketching and shooting.

information. This was very useful because I could then triangulate data, obtaining more refined information.

3.4 Participative Observation

Participative observation is a fieldwork method I used in combination with the method of unstructured interviews. Any kind of observation allows us to collect information based on what we see, and not on what people say they do or did. So, the idea of the fieldwork was to use both sources. On the one hand, I relied on what people said about themselves and the dwellings they produced. On the other hand, I had my own observations about their dwellings. The main idea of the participative observation is to infiltrate in situations, in order "to understand the culture and processes of groups (...)" (Descombe, 2003, p. 192).

> By participant observation we mean the method in which the observer participates in the daily life of the people under study, either openly in the role of researcher or covertly in some disguised role, observing things that happen, listening to what is said, and questioning people, over some length of time (Becker and Geer, 1957 in Descombe, 2003, p. 200).

In spite of the recommendation that the observer could or should act like an "undercover agent whose success depends on remaining undetected" (Descombe, 2003, p. 202), I did not hide my identity or profession. Besides, to act as an insider would have been an exaggeration on my part. I would not have acted naturally, which could have damaged the effectiveness of the interviews. At the same time, I decided not to emphasise that I was an architect, fearing that this would cause some kind of embarrassment among self-producers in talking about their homes. I accepted that I was an outsider but I decided not to stress this fact. For that, I identified situations during the visits where I could be closer to the people, while still being myself. At the same time, I tried to maintain focus through a certain detachment.

A fundamental aspect of participant observation is that it allows the researcher to place a greater emphasis on the *depth* rather than the *breadth* of the data. For that, it is necessary to develop a holistic understanding. This means that each individual, thing , event or situation must be examined "in terms of their relationship with other parts, and with a whole event or culture" (Descombe, 2003, p. 202).

Therefore, I found this method very much suitable to this topic, since it demands a holistic view of the socioeconomic context from whence it takes place.

Another important point to bear in mind is that the researcher is there to learn from the situation, not to carry pre-established hypotheses to the field. Therefore, it is recommended to spend as much time in the field as possible. "Time in field is needed to gain trust, to establish rapport and foster insights (...)" (Descombe, 2003, p. 203). I tried to spend more time in the neighbourhood both before and after the visits. I used to go for walks in the vicinities and to have a snack at the bakery on the next corner. I also used public transportation to get to the places I visited.

The participative observation demands discipline from the researcher. To have an open mind in the field, detached from pre-established theories or conclusions, does not mean that the researcher is unaware of the main points to be checked out.

II

Theoretical Background

1 WHO IS *BRASIL*?

1.1 A retrospective of the past

Brazil is a relatively young nation. Claiming they were seeking a new route to the east from the west, Portuguese explorers arrived at the South of Bahia in April, 1500. Since then, Brazil was occupied by Europeans, mostly Portuguese, and remained a colony of Portugal until 1822. Unlike the USA in its relation to metropole England, Brazil was a typical exploitation colony. In order to fully supply Portugal with natural resources in great demand at that time, Brazil had emerged under a predatory spirit, which promised rapid and uncontrolled enrichment to young European adventurers. It is fair to say that the country was born without any notion of nation or any project to achieve nationhood. Colonial Brazil (1500-1822) existed to satisfy an insatiable demand for the progressive wealth of Portugal. The role of fulfilling international interests continued during the Brazilian Empire (1822-1889) and even later, driven by England. In turn, the role of the Republic of the United States of Brazil, started in 1889, was to attend the interests of its remaining elites. For that, many choices had to be made in the country regarding the society and the economy, in order to consolidate it as we know it today - a very unequal society in which most people still have to really struggle for survival. Here I will present some of those

choices, which, in my understanding, are crucial for the maintenance of the current socioeconomic order.

The first critical decision I would like to present was the economic strategy adopted by Portugal during colonial times. It was a very bounded strategy, based on the cultivation of one single product - the monoculture of sugar cane - using the enslavement of the native population and of trafficked Africans as a single type of workforce. Although immensely rich, "Brazil was born poor" (Politizarvc, 2016) in the sense of an oversimplification of its own existence, the purpose of which was exclusively to serve others.

Secondly, European colonisers chose fornication as one of the main modes of occupation of the territory, since Brazilian lands were hundreds of times larger than the territory of Portugal, which also had a small population (Neointel Research, 2014). Brazilian colonialism was "overwhelmingly single male". Only about 5% of the European settlers brought their wives with them (Politizarvc, 2016). Unlike the settler colonialism present in the USA, in which fornication was forbidden, in Brazil it was not only allowed but also encouraged by the Portuguese crown, ignored by the Catholic Church and in a certain way incorporated by natives, under the form of *cunhadismo*[1]. Miscegenation was an efficient way for settlers to keep their land and increase their wealth. The illegitimate children could be Portuguese descendants or sons of black or native slaves. This identification would depend on the use that masters (or fathers) would make of their paternity. Economic expansion and territorial occupation, fundamental to the Portuguese project, greatly depended on that.

A third decision made by the rulers of colonial Brazil was the use of slavery. Because of diseases and violence, in three hundred years the population of native Brazilians decreased from five million in 1500 to less than 20% from its original number and the population of "Brazilian white" (*mestizos* and *mulattos*) has risen to two million by the year 1800 (Ribeiro, 1995, p. 151). An equally "inconvenient part of our history" is that "Brazil was built on the back of one of the largest forced migrations in history of mankind", the human traffic coming from Africa to the Americas, especially to Brazil. It is estimated that more than six-and-a-half million Africans were imported to Brazil between 1540 and 1860 (Ribeiro,

[1] *Cunhadismo* was an old habit among some native Indians to incorporate foreigners into their community through marriage. The European man who married an Indian woman would be automatically accepted in her community as an active member. Each European could marry many times, so that the practice became an efficient means of imposing hegemony of the whites over the natives. (Ribeiro, 1995, p. 81-86)

1995, p. 162). These estimates present the effects of the forced and planned cross-breeding between the Portuguese colonists and the natives and Africans, showing that a gradual and silent genocide took place on those lands against the natives, together with the cruelty of the slavery practices which often killed Africans before they could even reach the age of 25 (Nogueira, 2011).

The fourth critical decision was the division of the Brazilian territory into large horizontal parts, the Brazilian Captaincies. Those huge pieces of land were shared among members of the Portuguese elites. The local Brazilian aristocracy was not formed by members of the Portuguese royal family, but by a small group from the Portuguese elites who received titles and the power to occupy and explore the land.

Brazilian Captaincies in 1584.
Cintra, 2015.

It is still important to remember that Brazil was the last country to abolish slavery, in 1888, one year before the proclamation of the republic, as a result of massive international pressure. After the abolition of slavery, sons and daughters of slaves were abandoned to their own destinies without any perspective of social inclusion. They could not work on the plantations anymore, since Brazil started to import European workforce. There were no schools or shelters for the poor, nor any effort made to assist with their integration. They were driven to the cities to look for the worst jobs and the cheapest shelters available.

The age of overseas discoveries through exploitation was an embryo of what capitalism would become. One of the its main effects is the hegemony of one group of people over others. Those times have somehow shaped the socioeconomic mechanisms available in Brazil nowadays, which are equally responsible for the production of the spaces where Brazilians live today - our towns, neighbourhoods and homes. If, as suggests Lefebvre (2011, p.11), space is "more than a passive locus of social relations", we scientists and technicians should try to investigate if and how spaces serve a given system, and how privileged social groups make use of this strategy to maintain hegemonic interests.

The conditions under which Brazil was born clearly planted the seeds of the social inequality rampant in the country today. Social inequality manifests all the time, in all aspects of the society - in the role of

age and genders, in the educational and health care systems, in leisure opportunities. And, of course, on how the country houses their inhabitants.

> The housing sector has interfaces with practically every single part of a country's economy. (...) Housing is a power house for economic development, prosperity and wealth creation involving a multitude of institutions, regulations, policies, different stakeholders and significant government participation in the supply of land, infrastructure and finance (Acioly, 2014, p. xxi).

1.2 The present time and international relations (until 2016/2017)

Brazil remains among the top twenty most unequal nations in the world (World Bank, 2013) and presents the second-highest rate of wage inequality among new emergent economies, only surpassed by South Africa[2] (Bertelsmann Stiftung, 2013). Despite the high rates of inequality, at least until 2012 there were positive forecasts based on the decrease of Brazilian social inequality rates over time, in contrast to what is happening in other emerging nations, like China, India, Russia and South Africa (Neri, 2011; index mundi, 2016).

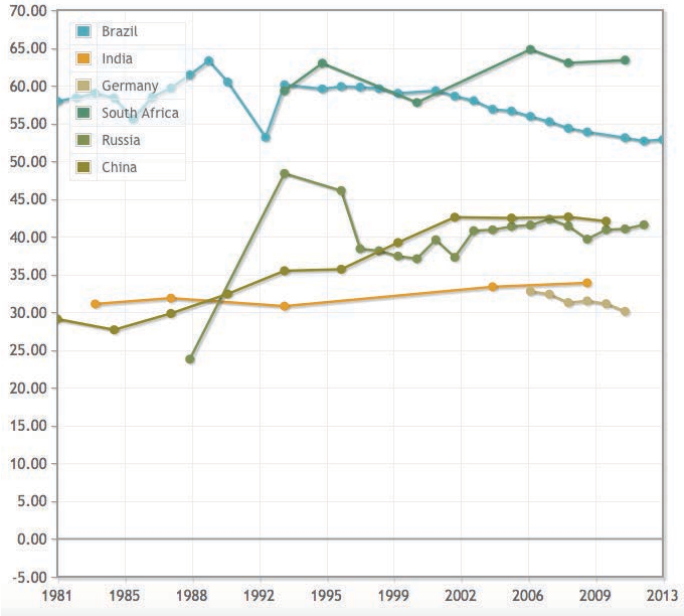
Since the beginning of this millennium, the most promising emerging global economies, according to field experts on economy and international relationships, are Brazil, Russia, India, China and (later) South Africa, the so-called BRICS nations. The acronym was coined by the economist Jim O' Neill in 2001 as a forecast of the next most powerful global markets[3] (O'Neill, 2013). The BRICS association arose after the worst capitalist economic crisis since 1930, calling great attention from global capitalism as a possibility of creating new consumer markets and the exploration of human and material resources, expressed by the large territories, huge populations, rising economic indices, and the existence of promising middle classes within these countries.

Of the five countries in the group, four of them are among the ten biggest countries of the world in area and among the ten most populous. Together, their aggregate GDP almost quadrupled from 2001 to 2011, from US $3 trillion to about US $11 trillion. At least until 2011, they have accounted for about

[2] Among the last five global emergent economies - Russia, India, China and South Africa (O'Neill, 2010).

[3] Originally the BRIC(S) nations did not include South Africa, which was added in 2010.

two-thirds of the world economy's growth. In monetary terms, this would be equivalent to the creation of a new Japan plus a new Germany (O'Neill, 2001). In 2011, they shared 25% of the world's GDP on a PPP basis (Bertelsmann Stiftung, 2013). In 2015, they accounted for 42% of the world's population, almost 1/5 of world's GDP, 15% of the world trade and 40% of currency reserves (Vanaik, 2015, cited in Bond, 2015, p. 262).

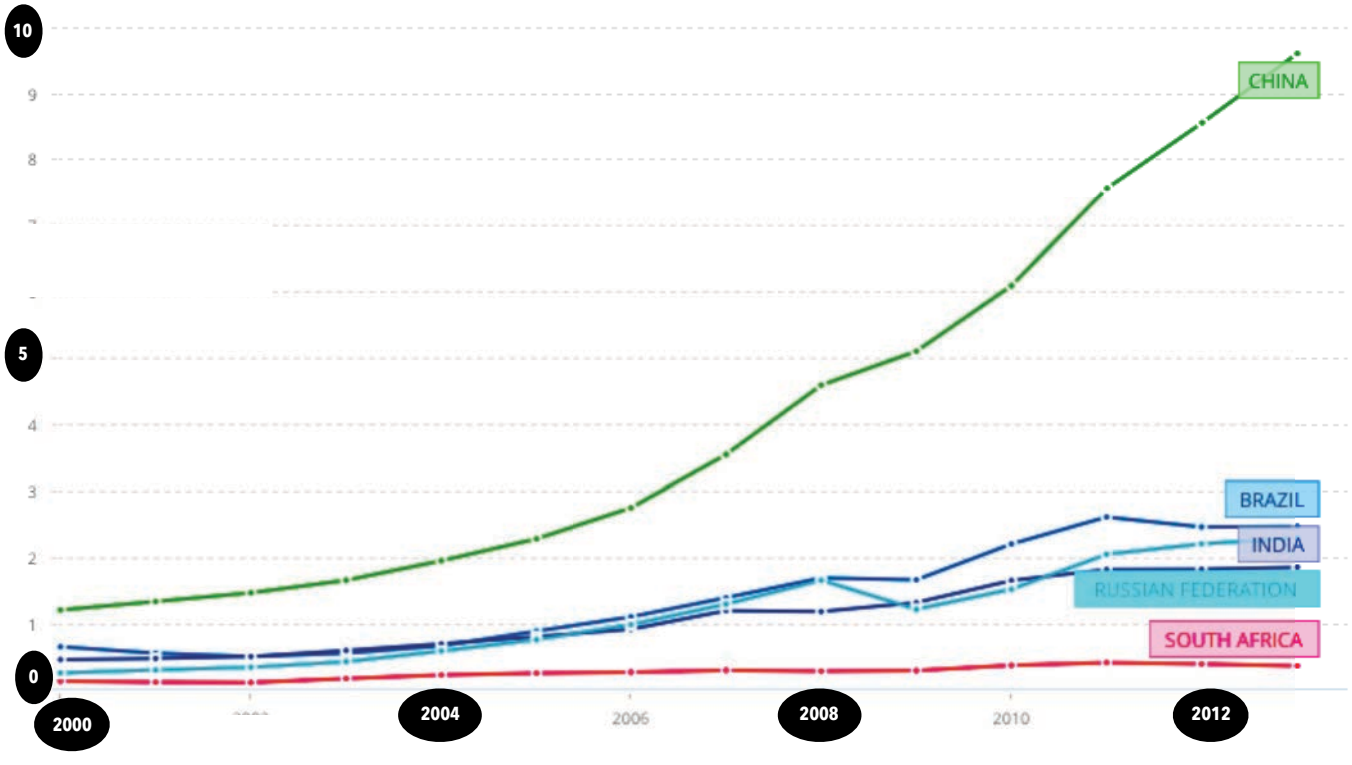


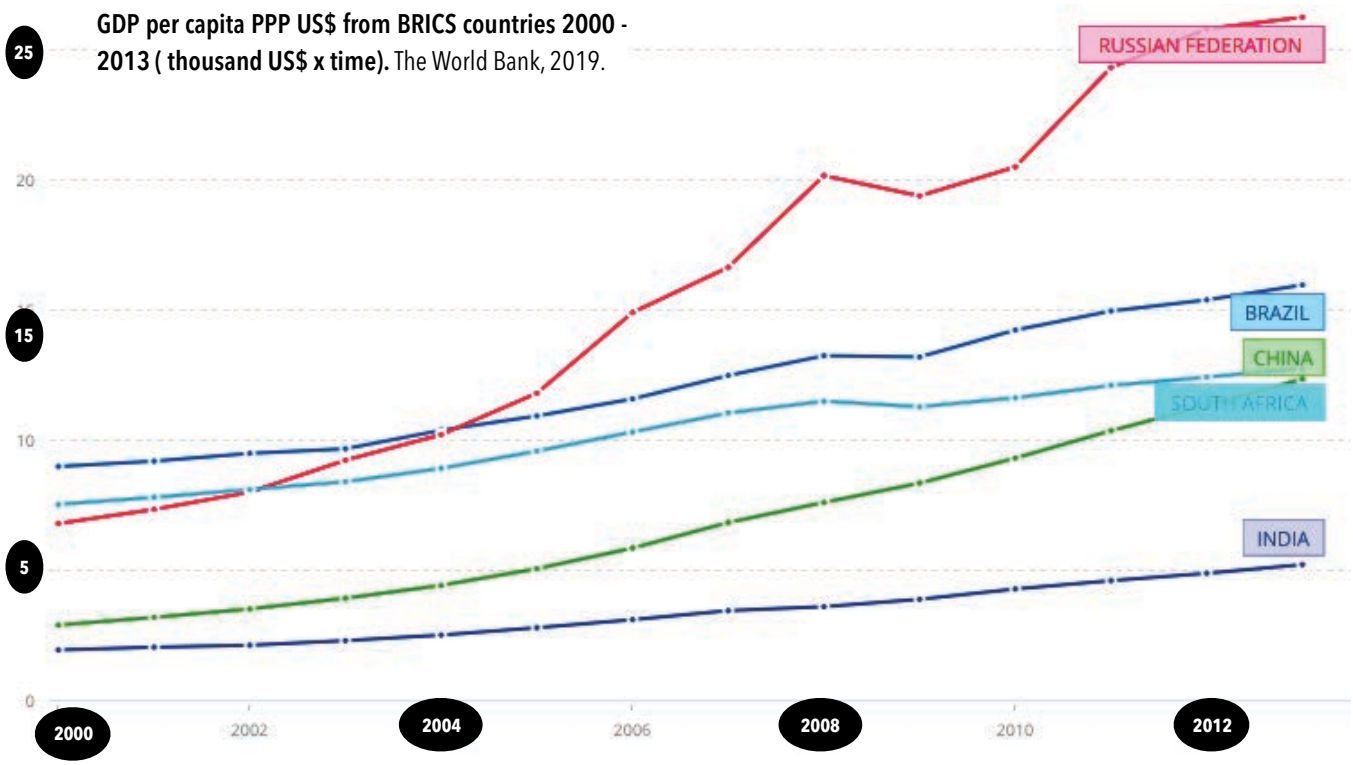
Evolution GINI Index from BRICS countries and Germany 1981 - 2013.
index mundi, 2016.

	Population (2015):		**Territory ranking (Km²):**
Brazil	207,847,528	5º	5º
Russia	143,456,918	9º	1º
India	1,211,050,527	2º	7º
China	1,376,048,943	1º	3º
S. Africa	54,490,406	25º	25º

Comparison Population and Territory among BRICS countries, 2015.
IMF Outlook for BRICS April 2015.

GDP current US$ from BRICS countries 2000 - 2013 (trillion US$ x time). The World Bank, 2019.





GDP per capita PPP US$ from BRICS countries 2000 - 2013 (thousand US$ x time). The World Bank, 2019.

> Together these economies have contributed over 50 percent of world economic growth over the last three years and over 60 percent to urban population growth during last decade (Tiwari et al., 2016, p. 19)

The middle classes play a key role in the economic growth of emergent economies. Also dependent on the middle classes are the maintenance of democratic and civic values, as well as environmental changes (Brandi and Büge, 2014). Among BRICS nations, only recently were Brazil and Russia internationally recognised as "middle class" countries, because the majority of their respective populations are no longer considered economically poor. Beyond that, in this respect, Brazil is the most attractive of this group of five because of its middle classes' potential. As we can see in the next table, in comparison with the rest of the population, Brazilian middle classes are considered average-sized, with an affluent consumerist potential. Conversely, China has a small middle class that consumes little in comparison to the rest of the country's population. In South Africa, the middle classes also consume little, although they are medium-sized. In India, the middle classes also consume little but represent a larger population. Russia also presents a medium-sized population of middle-class individuals, who consume at average levels. In this context, Brazilian middle classes are in the sights of the world. First of all, Brazil has a great number of middle-class people in comparison to the number of poor, and they have great consumerist impulses.

	Brazil	Russia	India	China	South Africa
Size	Average	Average	Small	Small	Small
Spending capacity	Affluent	Average	Average	Poor	Affluent

Size and Spending capacity BRICS countries.
Brandi and Büge, 2014, elaborated by the author.

The problem is that those countries have been promised prosperity and human development "by following the current trajectory of global neoliberalism", which is actually "increasingly predatory, exclusionary and unequal in many cases, quite explicitly so within the BRICS themselves" (Bond and Garcia, 2015, p. 4). The supremacy of developed countries from colonial times ensures that they are still playing more or less the same role as in the past. The question is which burden would then be assumed by traditional Brazilian middle classes and the new Brazilian middle classes - actually the *battlers* - and which roles do formal and informal housing play in favour or against those people?

Defenders of the global economy tend to forget that globalisation is still, at least from the point of view of those dominated, more an abstract idea than a reality. What happens is that international "agreements" among the dominant and the dominated establish regulations, rates, currencies and commercial practices which define consumption patterns that often imply what people often understand as a type of happiness, globally recognised, but imposed from top to bottom. In spite of the abstract idea of globalisation, the conditions of production and consumption, and the social practices of the people, typically remain local.

2 INFORMALITY AND IRREGULARITY

2.1 Generally

> Meanwhile, at home, informality manifests itself in the self-help construction that has produced most Latin American homes. Informality is the process whereby people engage in painstaking efforts to construct dwellings often years before services reach them (Gilbert, 2004, p. 35-36).

Still many studies on urban informality tend to see it displayed only in squats and *favelas,* falling into the trap of the *myth of marginality* and of clandestinity, already unveiled by Perlman (2000). The point is that urban informal practices, at least in Brazil, go beyond the territory of *favelas,* reaching formal neighbourhoods. Hybrid urban situations, which combine formal and informal practices, are very common in Brazilian cities. Briefly stated, there are formal subdivisions, probably peripheral, for which the state provides very poor infrastructure. There, residents purchase cheap plots, all regular, but they will informally build their homes themselves.

Most of the time, previous infrastructure conditions in peripheral subdivisions are not fully adequate, as might be expected of a formal neighbourhood. The infrastructure preconditions of the initial occupation of peripheral subdivisions, labelled as *formal* because of their regularity upon the state, do not differ much from the urban situations seen as *informal*, conventionally referred to as *favelas* and clandestine settlements.

Instead of reducing the "physical expression of informality" to an "architecture of squatting" (Roy, 2004, p. 296), it is important to keep in mind that the self-production of housing is one of the significant expressions of urban informality, not only in the physical sphere, but just as importantly, in the social sphere. Guided by this assumption, Bredenoord and van Lindert (2014) present a systematisation of the "modalities of housing provision for urban poor and the role of self-help construction", as seen in the next table.

Although they recognise three different models of informal housing provision and the existence of hybrid models, the Brazilian cases investigated by this research do not match any of them. The authors

tend to move between two extreme poles, ignoring very particular aspects which would give rise to even more hybrid formats than they present.
Among the informal modalities, the authors fail to consider the most typical situation in Brazilian consolidated *favelas*, in which residents buy pieces of land from former residents with their own economic resources, independently of any institutional support. On the one side, it is similar to a normal sale-purchase transaction, but happens informally, without bank loans and registrations at a notary's office. On the other side, it does not constitute a typical squatting, since they are consolidated neighbourhoods and the residents are not the first occupiers.

Similarly to these informal situations, institutions are not present in Brazilian hybrid situations either. As previously described, they are defined by a formal plot together with an informal dwelling. People build their homes on formal plots they have bought themselves, without any support. All hybrid models cited by Bredenoord and van Lindert have some kind of institutional provision. In the Brazilian case, the municipality deals only with the approval of the subdivision. In many cases the basic infrastructure is provided by the subdivision's owner in compensation for the permission to sell the land.

Moreover, Bredenoord and van Lindert use the term *self-build* only to show that people are responsible for the construction of their dwellings. In fact, many informal settlers do not actually build their dwellings themselves, or at least not all the time, but administrate the building process, planning, providing all the necessary resources, and hiring informal workers to do the job. Therefore *self-production* is a more appropriate term to define the Brazilian case, as we will see in the next section. Self-production is also a hybrid social practice, as is the informal real estate market which runs in a consolidated *favela*. Self-production is a more complex practice, because it involves the existence of an informal working market, however connected to and dependent on the formal economy.

Modalities of housing provision for urban poor and the role of self-help construction

		Modality	Characteristics	Vital role self-build process	
				Yes	No
Informal	1	Unauthorised owner-occupied self-build	Incremental construction of housing units over many years / decades on land that is (at least initially) occupied illegally	x	
	2	Unauthorised subdivision	Private developers subdivide land into individual plots which are sold on the informal market (without or with housing units)	x	
	3	Rental housing	Construction of units or rooms that are rented to low-income households, outside of formal controls (by rental property developers and by unauthorised self-builders)	x	
Informal-formal hybrid	4	Owner-occupier transformation of social housing	Occupants who have received a government 'social' house incrementally modify and / or enlarge it	x	
	5	Sites and services	Government provision of serviced plots of land on which residents incrementally construct their house	x	
	6	Cooperative housing partnerships	Cooperatives organise themselves (often with support from NGOs) save, obtain land from government and construct houses either communally or individually	x	
	7	Community settlement upgrading and resettlement	Community-based upgrading and / or resettlement; with support from NGOs, local government and / or international funding providers	x	
Formal	8	Legally established community groups	Legally recognised community groups - supported by NGOs - apply for public funding and develop housing on self-management, mutual aid and assisted self-help building processes	x	
	9	Government-led settlement upgrading	Informal settlements are upgraded through infrastructure and service provision and regularisation of tenure (by national and local governments, NGOs, CBOs and professionals); fostering housing improvements by the house owners	x	
	10	Direct government 'social housing'	Land and housing developed by the government (sometimes via the private sector and sold or rented to low-income households (also under rent-to-buy schemes)		x
	11	Private	Profit-seeking developers, often partnering with governments for low-cost housing (public-private partnerships); employer-built housing		x

Bredenoord & van Lindert, 2014, p. 63, adapted from Acioly & French, 2012, p. 424-425.

Occurring in *favelas* or in peripheral subdivisions, self-help initiatives on housing should not be regarded as "heroic entrepreneurship", as any other expression of urban informality also tends to be. Nevertheless, these initiatives are the responses in recent decades of the poor from the Third World to worldwide economic liberalisation measures, which have affected both working conditions and access to affordable housing (Al Sayad, 2004). As suggests Roy (2004, p. 289), "The political economy of urban

informality is thus the geopolitics of late capitalism" - an expedient tool to understand current urban conflicts.

Urban self-producers are political agents. The way they deal with shelter is part of their social practices, which are an integral and undeniable part of the urban fabric. They contribute to produce the city, in its formal and informal sides, and demand, albeit mostly unconsciously, in what Harvey calls the "right to change ourselves by changing the city" (Harvey, 2008).

2.2 Proposed terminology

Urban informality might imply irregularities and (controversial) variations of illegality. *Informality*, *irregularity* and also *illegality* are all different concepts; however, they have been randomly used to define practices, processes, and the *status quo* of things and people. I propose to systematise the definitions of *informal*, *irregular* and *illegal*, to make clear during the full text the exact situations we are discussing. These terms can, of course, be understood by their antonyms, *formal*, *regular* and *legal*, commonly defined as:

Formal	1) done in accordance with convention or etiquette; suitable for or constituting an official or important occasion; 2) officially sanctioned or recognised; 3) of or concerned with outward form or appearance as distinct from content.
Regular	1) done in accordance with convention or etiquette; suitable for or constituting an official or important occasion; 2) officially sanctioned or recognised; 3) of or concerned with outward form or appearance as distinct from content.
Legal	1) relating to the law; 2) permitted by law; 3) (US) denoting a size of paper that measures 22 × 35.5 cm (8.5 × 14 inches).

Definitions of (in)formal, (ir)regular and (i)legal.
English Oxford Living Dictionaries, 2017. Elaborated by the author, 2017.

Taking those elementary definitions into consideration together with the common usage of them in the urban studies field, I propose for this work the use of formal / informal to define the level of formality and informality of social practices, the use of regular / irregular to address the status of things upon regularisations and patterns, and the use of legal / illegal to refer to situations that are contrary to some governmental law or regulation.

The concepts of informality and irregularity are useful for this research because they teach us the fundamentals of the nature of self-production processes. At the same time, the legality of people's actions on space does not play any role for the urban situations here investigated. Legality and illegality are controversial concepts, especially when we look closely at Brazilian informal settlements, since legality has not beeb the same as justice. Although the social function of property is protected by the City Statute [4](*Estatuto da Cidade)* (BRASIL 2001), at the same time the Brazilian Constitution (BRASIL, 1988) assures the right to property, which can be individual and not collective[5].

Formal and informal

For this thesis I propose using the terms *formal* and *informal* to demonstrate how social practices take place. "Formal" describes a manner of doing things and conducting processes, which might or might not follow conventions and patterns. *Formal* and *informal* can also define the stages of things as a result of a given process. For example, a dwelling can be informally planned and built, meaning that both processes (planning and construction) took place without formal projects having been created and executed by professional technicians. In this way, self-production processes are based on informal practices, since they are led by users themselves, non-experts on construction or managing of building sites. Informality includes more than informal employment. Research on the informal sector generally takes for granted housing, focusing on work and the economy. Studies have not paid much attention to where and how informal workers reside, or that much informal business happens at home, using part of the physical space of the self-produced dwellings[6].

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[4] The City Statute (*Estatuto da Cidade)* "establishes rules of public interest and social interest that regulate the use of urban property for the collective good, security and well-being of citizens, as well as environmental balance" (Brasil, 2001, p.1, my translation). It establishes urban instruments to regulate the use of land in favour of collective rights and the right to the city: Transfer of Rights to Build, Progressive IPTU (Land Taxation), Special Social Interest Zones, Land Tenure Regularisation, Onerous Grants on the Right to Build, Consorted Urban Operations, Collective Adverse Possession, etc.

[5] See Brazilian Constitution, Acts 5th and 170th (BRASIL, 1988).

[6] Informal workers are one-billion people worldwide (Davis, 2006, p. 178) and constitute about two-fifths of the economically active population of the developing world (Challenge, cited in Davis, 2006, p. 176). In Brazil in 2013, more than 35% of the non-agricultural employment was considered informal (The World Bank, 2017). Informal workers are those who work 1) without a formal contract, 2) do not contribute to social security, 3) the unpaid, 4) in the production for their own consumption and of construction for their own use (IBGE, 2013, p. 260, my translation). Self-producers and self-builders are included in the last category.

The urban *battler* is the popular market stall-holder who sleeps inside the stall during the week and goes home to a distant periphery on the weekends. They are bricklayers who work during the week in a construction company and raise chickens in the backyard of their self-produced homes. They are younger brothers who have left their hometown following the elder sister. They live in her house with her family and use the garage to repair cars.

Regular and irregular

On the other hand, it is suggested that *regular* is a term that tells us about what something is, in the sense of its *status quo* and general condition, as a result of a specialised formal procedure or its absence. Its opposite definition - *irregular* - is, in turn, the stage that has resulted from informal practices, which did not follow standardised rules. For example, an irregular subdivision is a group of plots which were not recognised by the municipality because they were informally conceived, and as a result were beyond the purview of the formalisations demanded by local authorities.

Clandestine land divisions (Fernandes, 1993) or irregular plots have no registration, since they were not approved by the municipality. This condition has implications in the formal real estate market, since there is no legal proof of ownership. These parcels cannot be part of official down payments or be financed through bank loans. Nevertheless, although a result of an informal practice, irregular plots can become regular subdivisions if their existence as a subdivision is at some point recognised by the state. The municipality can recognise and convey ownership to the settlers, depending on each case, so the irregular status of a subdivision could be converted to regular.

An irregular dwelling, which is the result of informal planning and construction practices, can become regular if the dwellers engage in regularisation programmes promoted by municipalities. Every couple of years the local urban regulation departments create the opportunity for owners to regularise their buildings by applying for a regularisation process, based on an as-built project and on the payment of penalties corresponding to the infractions committed against local construction regulations. The foregoing two examples illustrate the basic difference between *informal* and *irregular*. *Informal* refers to practices and processes, while regular refers to a state of things that can be reversible.

The opposite path, for example a dwelling that once had a regular status and became irregular, happens only with dwellings. A dwelling could have been officially planned, built and approved by the

municipality, but later can be changed over time to the extent that the current architecture has nothing to do with the original project. Regarding land subdivisions, once they are regularised, they are official land: they have a registration number recognised by the municipality and are regulated by the urban law. Even though the land is considered regular, it is highly likely that on those plot dwellings will be built informally. Irregular dwellings built on formal subdivisions are a recurrent hybrid model of housing provision. The following table provides an overview of the level of irregularity present in the city of Belo Horizonte, as an example. Unfortunately, these data are restricted to the municipality of Belo Horizonte.

This phenomenon is clearly visible when we get to know the peripheral subdivisions of Belo Horizonte and its satellite cities. The original urban design of the plots is recognisable in spite of the variety of architecture, which in many cases ignores the local Land Use and Occupation Laws.

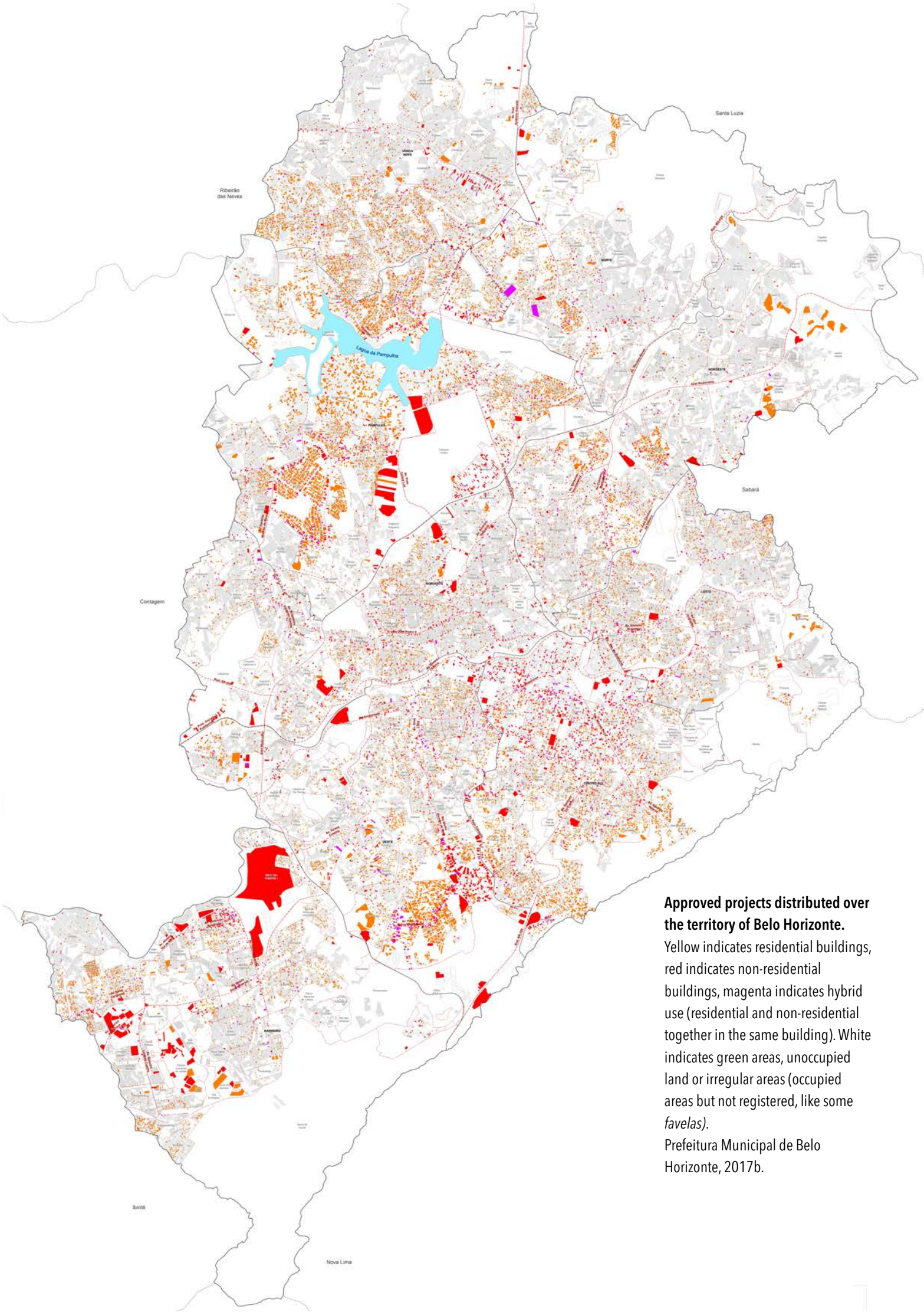
Until 2012, Belo Horizonte had more than two- hundred-thousand dwellings which had their projects approved by the municipality, as initial constructions (new residences) or as part of regularisation processes (existent dwellings). Considering the total number of households of the city, we then had more than five-hundred- thousand dwellings that had not been approved by the municipality. This indicates that about 70% of the total of households from Belo Horizonte remain irregular, without approved projects[7].

Irregular residential buildings in Belo Horizonte until 2012.

Estimation of number of permanent households (considering household = dwelling)*	781.189
Number of regular dwellings (architecture projects were approved by the municipality, dwellers have or not occupation license)**	210.516
Number of irregular dwellings (without any approval by the municipality)**	551.620
Percentage of irregular residential buildings (%)***	**70,6**

*Cidades IBGE, 2010. **Prefeitura Municipal de Belo Horizonte, 2017c; *** Estimated by the author, 2017.

[7] The total number of permanent households was estimated using the number of permanent households from 2010, (762,136) provided by the last national demographic census (Cidades IBGE, 2010). This represents an increase of 2.5%, which is the average growth rate of the number of households in Brazil, Minas Gerais and Belo Horizonte's Metropolitan Area between 2011 and 2012. See page 78.

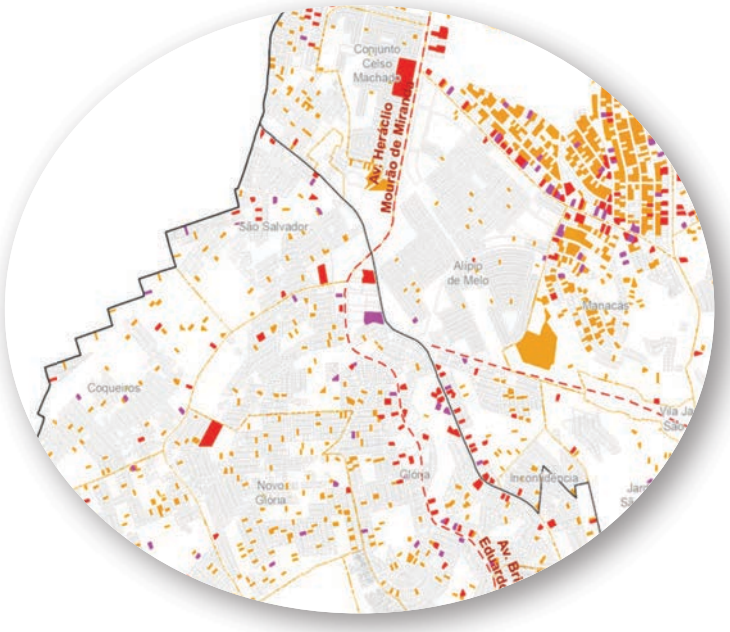


Approved projects distributed over the territory of Belo Horizonte.
Yellow indicates residential buildings, red indicates non-residential buildings, magenta indicates hybrid use (residential and non-residential together in the same building). White indicates green areas, unoccupied land or irregular areas (occupied areas but not registered, like some *favelas)*.
Prefeitura Municipal de Belo Horizonte, 2017b.

Once again, it is important to distinguish one thing from the other. We cannot state with certainty that all irregular dwellings in Belo Horizonte were informally built, although it is highly probable. Theoretically, dwellings can be formally built by formal technicians, but for some reason have not been approved by the municipality. However, the estimation of Belo Horizonte's irregularity of dwellings is not instructive about informality, which is broader, more complex and harder to estimate. In any case, the level of irregularity in Belo Horizonte gives us an idea of how a great part of the urban environment has been built in defiance of the municipality's rules and, most importantly, by the people themselves, without the assistance of technicians.

A large number of those two-hundred-thousand dwellings that are approved projects have not completed the entire process, since the approval of the architectural project is only one facet of the entire process. If we were to take only those dwellings that completed the processes and obtained an occupation licence *(Habite-se*), we would have an even higher percentage of irregularity, as the approval of a project already indicates that a professional was formally involved.

That foregoing estimation relates only to Belo Horizonte. Unfortunately, the same information from other satellite cities could be not obtained. But Belo Horizonte presents a diverse urban environment, which may suffice as an average representation of the whole metropolitan area. As we can see, there are neighbourhoods with high rates of architectural projects' approval (yellow spots). These are probably urban environments where apartment buildings built by construction companies in formal procedures dominate the landscape. Others areas reveal almost 100% irregularity, with only one or two approved projects per block, a typical situation in self-produced neighbourhoods. Among the other 33 cities which comprise the RMBH, we can find towns with a probable high rate of irregularity (*Vespasiano*) and others where this percentage might be drastically smaller (*Nova Lima* and *Lagoa Santa*), because of their many gated communities, all regular.



Zoom of Belo Horizonte's map.
Prefeitura Municipal de Belo Horizonte, 2017b.

The level of irregularity in dwelling construction in Belo Horizonte (70%) matches the estimations from the *Ministério das Cidades* (2009), which says that 70% of the Brazilian households were built through self-building processes. This number is much lower than the estimations on informality, provided by the Brazilian Architecture and Urbanism Council (*CAU-BR - Conselho Brasileiro de Arquitetura e Urbanismo*) (2015). This institution claims that "more than 85% of Brazilians build and reform without the guidance of architects and city planners or engineers", which indicates the level of informality in building in Brazil in general, whether residential or non-residential. It does not address the approval of projects, but refers to the lack of participation of a formal professional in a given social practice.

Since 2008, Brazilian low-income families have had the right to access the technical work of construction professionals for free, by means of the Federal Law 11.888 (BRASIL, 2008), the so called *Lei da Assistência Técnica (Technical Assistance Law).* The national Architecture and Urbanism Council understands that technical assistance in social housing is a fundamental right, as are health and education. Unfortunately, even after almost ten years since the enactment of the law, it is still rarely applied throughout Brazil. The law exists on paper, but the ways to make it happen remain unrealistic. First of all, the law is addressed to families who earn a maximum of three minimum wages per month. This excludes families who earn a little more and therefore can self-produce their dwellings independently from the government, but are still in need of a technical advisor. Moreover, the law assures only the elaboration of technical projects, but not their execution, which is also incompatible with the needs of the majority - normally technical and spatial emergencies. This law aims to protect the people in need of technical advice, but does not include in the architectural field's agenda the work with low-income residents. Architects are considered elite professionals in the general mind set and the architectural field has not accepted this responsibility yet. On the one side, the working practice of architects remains incompatible with the demands of the low-income clientele, and on the other, the remuneration of the professionals depends on the government, which in turn makes the application of the law even more complicated.

Regardless of a strengthening of institutional urban policies during the last decades, only one governmental action, addressed to finance technical assistance to municipalities, was implemented. The action, called Action of Technical Assistance for Social Housing *(Ação programática de Serviços de Assistência Técnica para Habitação de Interesse Social)*, was part of a bigger programme for social housing and took place only from 2007 to 2011. Unfortunately, it had a reduced participation because

of inadequate planning. The federal government has been primarily focused on the construction of new housing units, to the exclusion of possibilities in which the Technical Assistance Law would contribute, for example, in the improvement of precarious dwellings and idle buildings (CAU/RJ, 2014).

Brazil, as many other emergent countries, depends on informality for many reasons. Informal practices protect people from unemployment, a constant fear of the emergent middle classes from developing countries, who do not want to lose what they have barely managed to achieve. It is a quick and positive response to a general precariousness of their life - low-incomes, working insecurity, poor educational opportunities, and access to affordable and decent housing.

Informal housing is responsible for a large number of housing units year after year, which assures decent dwellings for those who have not been assisted by the government. The former and the current generations of Brazilian *battlers* are included in this group. Self-production is a bridge is this direction, assuring housing as a component for social mobility.

3 SELF-PRODUCTION - WHAT IS IT, HOW DOES IT HAPPEN AND WHY?

> "Shelter is a fundamental human need. It is a form of protection from the elements, a means through which to express individual and cultural values, and a way to produce, consume, and accumulate capital" (Patton, 1988).

The reasons for shelter shortage in developing countries have been justified with many arguments: the combination of unplanned urbanisation, inadequate infrastructure, rapid population growth, high levels of migration from the countryside to big cities, low purchasing power of the poor, etc. (Bonduki, 1998; Palmer and Patton, 1988; Tiwari et al., 2016). These and other reasons for the housing shortage have surpassed the capacity of local governments to provide adequate shelter, which should include the offer of decent housing units, served with adequate infrastructure and integrated with urban services. The result is that people act for themselves by occupying areas without proper infrastructure, or by affording cheap distant land. In both cases, dwellers provide homes for themselves, hiring a semi-skilled workforce or working directly on the building site themselves. They take all decisions regarding the space and administration of the building process, relying on their families, neighbours and friends. Although it happens in spite of formal private and public housing production systems, it is somehow an effect of both, in the sense of the government's incapability of meeting the demand. For good or for ill, self-producers have achieved, at least in Brazil, what governments and housing departments are not even close to.

The international literature on housing shortages have understood the above- described phenomenon in various ways with some specifications, reflected by the terminology used. Terms such as *squatter housing* or *illegal development* are commonly used to describe self-initiatives on housing which happen on occupied land. When the builder owns the land, but builds despite the local urban regulations, the term *unauthorised housing* is often applied. To emphasise the idea that various kinds of shelter can be created by personal action without external stimulus, the term *spontaneous settlements* has been also used, as well as *spontaneous shelter.* The latter term calls attention to the production of shelter units, but many times essentially made by the residents, who do not depend on builders or contractors (Palmer & Patton, 1988; McTaggart, 1988). The terms *unauthorised* or *clandestine* have also been used, implying a semi-legal process of construction, where the land is

officially purchased, but the dwelling is built without authorisations from the municipality and infringes local regulations and building codes. In turn, the terms *irregular* or *clandestine land divisions* have been used in Brazil to qualify the occupation of land and their informal subdivision and commerce of plots, leading to the appearance of clandestine districts (Fernandes, 1993). Other terms like *autoconstrucctión*, *self-build* and *mutual aid* are generally used in situations where community members participate jointly in improving their homes or their neighbourhoods (Ward, 1982). *Self-managed* housing (Bredenoord & van Lindert, 2014) has been used in the same sense as *self-building,* although it tends to emphasise the administrative aspect of the practice.

All those terms have been used internationally and describe situations which can all be embraced as variations under the broad term *self-help housing*. Self-help involves many types of "housing activity, which (...) includes self-building (auto-construction)" and many other self-managing practices. Self-help can be defined as when "many people structurally alter their own houses even when they are provided with a ready-made unit"; also when people build themselves, but can also hire "some sort of paid of skilled or unskilled labour" to do the job (Burgess, 1982, p. 56). Turner (1977) goes further and associates self-help with the self-determination of individuals in the local level of the building environment. He advocates in favour of self-help practices, arguing that the only way to confront a housing shortage is the autonomy of the user, since conventional heteronomous practices to provide housing have constantly failed.

The next table is an interesting systematisation that compares the stages of self-help housing with the conventional stages of housing provision. As we can see in the table, and will be confirmed by the case studies of this research, the development cycle of the construction processes in informal housing starts with the occupation. Afterwards residents begin to modify their homes according to their needs, building, servicing and planning step-by-step. The state and banks have a restricted role, since the products they offer are mostly inadequate for people's realities. Collaborative actions play a fundamental role and happen spontaneously without much organisation, as part of people's social practices.

Formal housing provision x Informal (self-help) housing

	Formal housing provision	Informal (self-help) housing
Development cycle	Planning Servicing Building Occupation	Occupation Building Servicing Planning
Commissioning and construction	State housing institution Local government Private real estate developer Building company Housing cooperative	Owner-occupier Housing cooperative Community group
Funding	Banks (loans, mortgages) Government funding (loans and tax incentives) Government subsides Employer organisations (loans) International organisations (donations or loans)	Family (savings and loans) Microfinance institutions (loans) NGOs (donations and loans) Charity organizations, churches, etc. (donations) Loans by private parties Savings and credit associations
Payment	Rents Payment in instalments (mortgages)	Short-term instalment for plot purchase Savings for expansion / improvement of the self-build home Microfinance
Construction	Construction companies	Family, friends Construction workers (from households' networks) Informal building contractors (local)

Bredenoord and van Lindert, 2014. p. 59.

3.1 The Brazilian case - Self-production *(Auto-produção)*

In spite of those references, I prefer to use the term *auto-produção* - self-production (Kapp, Baltazar & Velloso, 2006; Baltazar & Kapp, 2006) - because the word "production" embraces all processes defined by the other terms I have mentioned before, which, instead of focusing on processes, emphasise objects (*settlement*, *management*, *building,* and *help)*. The most common Brazilian case of self-help is self-production, which encompasses all of the above. It addresses a type of production, defined by the social practices which configure it, independently of the resulting object and of the type of territory where it happens. As a production process, it may happen in *favelas* or in the formal city, very often in peripheral subdivisions. It may include self-building and outside workers for specific tasks as well. Self-production processes might include "squatter settlements which have arisen by land invasion" (Leeds, 1969) as

well as "subdivisions of land which lack services or items of title registration" (Ward, 1982, p. 1). It may be partially legal, as with the hybrid models previously discussed, once land has been purchased but construction is unauthorised.

> "If space is produced, if there is a productive process, then we are dealing with history, its forms and representations" (Lefebvre, 1991, p. 46).

As in many other developing countries, self-production is one of the few ways which Brazilian low-income families have to access housing. Of course, it is not the only way, but surely it is the only way where people can exercise a little of their autonomy on choosing what better fits their needs. Although some governments have started to accept informal housing instead of clearing squatter settlements, and international institutions such as the World Bank and the UN-Habitat have recognised the *vital role* of self-help housing (Bredenoord & van Lindert, 2014) for the developing world, there is a common sense of looking at self-help initiatives from a superficial point of view, as if they were a *praxis* exclusive from squatters or slums, and as if they happen because of an extreme need for help. Even with the diverse problems and difficulties faced by dwellers, self-production has been one of the most effective modes of housing production in Brazil. It consists of a sort of mass housing production, which spreads over the territory in local scale processes. For being a common and accessible practice, it has achieved what governments have not been able to provide and has, in an unorthodox way for formal technicians, assured housing for many. A question is, if taking self-help initiatives for granted, we are naturalising inequality, since these initiatives are a response to the lack of affordable and adequate housing for the poor and for low-, and middle-low-income residents. And doing so, instead of recognising the importance of the exercise of autonomy on self-production initiatives, we would be accepting that providing and making the access of housing easier for the poorer is not the proper responsibility of the state, which actually has a role in making efforts to decrease social inequality.

Part of the Diagnosis on Brazilian Housing Sector from 2009, elaborated by the Minister of Cities (*Ministério das Cidades)*, suggests that 70% of the housing production in Brazilian cities consists of "Self-building: the (formal or informal) production made by people themselves" (MC, 2009, p. 21, my translation). Although having recognised self-initiatives on housing as legitimate as private and public initiatives, there is an inaccuracy in the understanding of the concept of self-building and, consequently, of self-production. It seems that the MC has named all self- initiatives, which neither

come from the state nor from private construction companies, as *self-building*. However, self-building is only one variation of self-initiatives on housing in Brazil. It is important to distinguish one self-initiative from another, in order to identify and understand the mechanisms from each variant, what they demand from local environments, and their effects. Although owning a generalist assertion, the same MC's diagnosis claims the need "to know the conditions in which the housing supply occurs" (MC, 2009, p. 22).

MC's estimation probably refers to the complete amount of self-initiatives on housing production, surely dominated by self-production processes, and not only self-building as the text informs. Self-production is more recurrent in Brazilian cities than initiatives restricted to self-building. Do-it-yourself practices are not so common in Brazil as in some European countries, primarily because of the availability of a cheap working force. Many dwellers count on the work of a local bricklayer rather than to do the job themselves. Besides, some people simply cannot do it. Self-building implies that dwellers take part of the construction process, directly contributing with their manual working force in the building site, while self-production refers to more complex processes, which include the informal and formal contracting of construction workers and services. Self-production processes do not exclude self-building. In many cases, self-producers work as self-builders in some phases of the building process as well. As we will see with the case studies of this research, the principles and the main characteristics of self-production vary with time and with what people face in their private lives in a given moment. Depending on their own capabilities and on the stage of the building process, dwellers find themselves able to work directly on the building site as self-builders. In different moments, they might afford bricklayers who informally work on weekends, or even hire a commercial company to pump concrete upstairs on the rooftop, a kind of service that was unthinkable for most low-income self-producers some years ago. Besides a division in the manual work, the decision- making process is somehow shared among all involved. Because of all these aspects, self-production processes tend to be more complex than self-building processes led by individuals and self-managed mutual aid groups, which in spite of having been conducted by dwellers themselves, the people involved count on some kind of institutional support.

> Self-production indicates that dwellers manage resources and take decisions about the spaces, with little or no access to information, technical support, financing and government's support. This is the mode

> of production that characterises, in different degrees of irregularity, the space of *vilas* and *favelas* and most of the city's outskirts. It can happen with or without self-building. Self-building indicates, only and strictly, the direct participation of the dwellers in the material work on the site, independently of being combined with self-production or other forms of management (...) Self-building indicates, only and restrictively, the direct participation of dwellers in the manual work of the building site, independently to be combined with self-production or other forms of self-management. (Kapp & Cardoso, 2013, p. 104, my translation).

Discussions about the autonomy of uses on producing their own dwellings appear to Turner (1977) to confront conventional modes of housing production, most of them dependent on local governments, which were already at that time not able to provide what people really needed. Although self-production implies that housing decisions are controlled by dwellers and their families themselves, who can exercise levels of autonomy in their everyday practices, self-production does not happen completely autonomously. Autonomy is our right to self-govern without outside impositions. It implies our will and capability to provide our own rules for ourselves (Kapp, 2004). The question is to what extent self-production is more a response to deprivation and oppression than a conscious exercise of autonomy. In any event, one side does not imply the exclusion of the other. Self-producers act autonomously, but within very clear limitations imposed by the socioeconomic conditions of the urban environment where they live. In this sense, in the sphere of self-help initiatives, the level of autonomy of self-producers reflects their socioeconomic conditions and has a direct impact on the spaces they aim to control.

Self-production is a way of conquering *spatial capital* (Centner, 2013) in a battler field where the competition for housing is fierce. Housing is disputed between residents and the multitude of limitations they have to deal with - scarcity of economic resources in comparison with high prices of plots and dwellings in well-served infrastructure neighbourhoods, high interest on bank loans for housing financing, lack of know-how during self-building processes, poor infrastructure in distant neighbourhoods where land is cheaper, inadequate regulations, urban violence, etc. By surpassing those obstacles residents start to be able, to some extent, to control and to manipulate a place in order to make it fit in their specific *habitus* (Bourdieu, 1984), typical of each individual and his/her family. That is why dwellers' satisfaction has nothing to do with standards, nor is it imposed by mass housing solutions (Turner, 1977), either by architects and their own *habitus*. Self-producers fight for their own

(and the only possible) version of quality of life. In this sense, self-production means something broader - a means of taking part in the life of the city.

In the recent past, international discussions on housing shortage ended up highlighting a reduced understanding of spontaneous shelter through illustrations which used Indian *bustees*, Turkish *gecekondus* and Brazilian *favelas* as synonyms for urban poverty. To take Brazilian *favelas* only as the exclusive place for spontaneous shelter, and consequently as a place of the exotic, of poverty and shortages, is an out-of-date view not only of them, but of cities in general (Perlman, 2004). As Valladares (2008) explains, *favelas* have been seen as "necessarily a hillside settlement (*morro*), illegally occupied, outside the law, under-serviced, a concentration of urban poor". Those aspects may describe some *favelas,* but not all of them. At the same time, these same aspects, in the first place attributed to *favelas*, may equally describe a "normal" peripheral formal neighbourhood from any Brazilian city.

> There are favela areas which have been subject to significant urban improvements in terms of infrastructure bringing them up to the standard of average urban areas; there are favela areas where the original shacks have been replaced for long by houses made of concrete, with all the qualities and facilities one would find in other areas of the "normal" city; there are favela areas where most building are several storey ones; and there are even a few favelas where land and home ownership have been regularized (that has proved the most tricky thing up to now) (Valladares, 2008, p. 22).

Distant subdivisions might present, or have presented in the beginning of their occupation, almost the same constellation of problems attributed to *favelas*: lack of sufficient transportation and adequate drainage, water supply and sewage systems, deforestation of local vegetation, and poor control over the polluting activities of nearby industries. Many peripheral small and medium-sized subdivisions are located in vulnerable urban environments, with all sorts of infrastructure problems and few green and public spaces (Patton, 1988). In many cases, the first settlers had to find themselves a solution for water supply and sewage, because the infrastructure was not ready. Today, although some homeowners have officially purchased the land and have ownership titles, building practices are mostly informal, despite official construction urban parameters (Kapp, 2012).

3.2 Brazilian housing deficit

On the one hand, estimations of the Brazilian housing deficit in 2012 demonstrate that Brazil needs 4,664,113 (8.5%) of housing units to meet the demand in cities, a number that reaches 134,565 (about 8%) only in urban areas from Belo Horizonte's Metropolitan Region (Fundação João Pinheiro - Centro de Estatística e Informações, 2015). According to the parameters from the FJP, those estimations identify only the need for new housing units. They have addressed the latest governmental housing programmes and focused on the production of new dwellings, most of them made through the construction of apartment blocks by private construction companies without the participation of the population in completely heteronomous processes.

Components of the Brazilian Urban Housing Deficit 2011-2012.

Brazilian Housing Deficit (urban)		4,664,113 (Brazil) / 134,565 (RMBH)
Definition		Lack of housing units in cities, which indicates the need to obtain new ones in cities.
Precarious dwellings	Precarious households	Dwellings without brick or wooden walls
	Improvised households	Non-residential or other places used as alternative housing (commercial buildings, under bridges, abandoned cars and boats, caves, etc.)
Co-dwelling	Shared homes	Families living together in the same household or living in a single room. The concept of family is defined by "two or more people united by blood ties, domestic dependency or familiarity norms"
	Rental houses	Households made up by one or two rooms located inside a *cortiço* (poor quality building with several rooms and normally shared bathroom)
Extreme burden on urban rent		Number of urban households, whose monthly income is inferior to three minimum wages, which spend more than 30% of their income in rent (houses or apartments)
High density in rented dwellings		Rented dwellings in which the average number of residents is greater than three per bedroom

Fundação João Pinheiro, 2015, my translation.

On the other hand, the FJP calls our attention to the number of dwellings in need of adequacy, since

> (...) the best way to address the housing problem is to implement complementary policies and housing policies and not, necessarily, to build more housing units (FJP, 2012, p. 15, my translation).

The need for improvement of inadequate dwellings is described by five variations of inadequacy - *lack of infrastructure, over density of owner dwelling, shared restrooms, inadequate roof and land inadequacy*. We cannot have a general counting on housing inadequacy, because one household might present more than one criterion and the results would be then double counted. The main reason for inadequacy is the lack of infrastructure conditions found in 135,455 households (about 8.3%) from Belo Horizonte's Metropolitan Region[8] in 2012.

Components of Urban Inadequate Housing 2011-2012 in Belo Horizonte's Metropolitan Area.

Inadequate Housing		(cannot be generally counted)		
Definition		Dwellings in need of improvement, due to their undesirable conditions. This regards problems with dwellers' quality of life. It does not have to do with the supply of new housing, but with their existing inadequacy. It requires policies regarding the material improvement of dwellings.		
			%	**#**
Lack of infra-structure	Electricity	Dwellings without electricity or water supply, sewage pipes, toilet facilities, besides waste collection	8.3 %	135,455 (10.323.559 in Brazil)
	Water			
	Sewage			
	Toilet facilities			
Over density of owned dwelling		Private dwellings in which the average number of residents is greater than three per bedroom	1.3 %	21,453 (1.073.720 in Brazil)
Shared toilet		Households without private toilet facilities	0.3 %	5,563 (261.408 in Brazil)
Inadequate Roof		Although having walls, dwellings covered by reused wooden, tin or zinc roofs	1.4 %	23,435 (848.218 in Brazil)
Land inadequacy		Situations where at least one resident declares to own the dwelling, but does not to have ownership of the land, (full or part) (...) where the household is settled	3.6 %	58,804 (2.041.402 in Brazil)

Fundação João Pinheiro, 2015, my translation.

[8] UN-Habitat developed five so-called shelter deprivation indicators for the definition of slum or low-quality housing: insufficient living space; lack of access to safe drinking water; lack of access to adequate sanitation; insecure residential status (Bredenoord & van Lindert, 2014)

Number of urban permanent households x 1000

	Brazil	Minas Gerais	Belo Horizonte's Metropolitan Area	% Growth
2011	52,801	5,417	1.541	+2-3 %
2012	54,02	5,537	1.593	

IBGE, 2012a; IBGE, 2013.

The data tell us that, in spite of these absolute numbers, which reflect a significant demand, the percentage of inadequate dwellings is relatively small in comparison to the total number of Brazilian households, which has risen year by year between 2% and 3%. By 2013, the number of Brazilian households had surpassed 65 million (IBGE, 2013).

Based on this information, we can see that self-producers have been able to achieve some significant level of adequacy in their self-produced dwellings, notwithstanding all difficulties they have. At the same time, as previously discussed, the formal means of the construction field do not match the financial, technical or timeline demands of self-producers (Nogueira, 2010), an observation confirmed by Ward back in 1982:

> The majority of the poor simply could not afford the repayments of rent for 'popular' or 'social interest' housing, as it was frequently called. The irregular nature of their incomes from one week to the next meant that any system which demanded regular repayments was unsuitable and liable to massive defaulting (Ward, 1982, p. 2).

Moreover, it is important to stress that only parts of *favela* dwellings are counted in the housing deficit. As Brazilian policies on housing to some degree allow upgrading and land regularisation, a great number of housing units - in *favelas* as in other neighbourhoods - could be improved and maintained (Pasternak & D'Ottaviano, 2014).

Although there is great reliance on self-production (which, to some extent, also applies to traditional middle-class families doing small renovations and domestic repairs), the architectural field has not paid much attention to it, either as a new market to be explored or as a topic to be recognised and studied. Ordinary buildings tend to be invisible to most authors coming from the architectural field, or are seen as a problem to be resolved by city planners - a problem for the integrity of the architecture and as a problem for the health of our growing cities, a "clean slate" waiting for solutions from the planners. In this sense, self-producers need adequate support and attention from technicians as advisory partners, and not as judges of good or bad architecture. Common sense should dictate that a house with higher material standards should not necessarily be seen as a better house.

3.3 Self-help - a known idea

Ignoring all the conditions which drive people to do it, squatting has traditionally been regarded as a destructive process, as if formal procedures were always environmentally safe, realistic, and adequate (Roy, 2004). We routinely see formal and regular constructions that are completely disconnected from local environmental conditions, causing problems related to soil permeability and urban drainage. Conversely, many informal settlers have made very good use of the land, integrating with local environmental conditions and doing respectful alterations on the place (Grupo de Pesquisa MOM UFMG, 2012). In any case, self-production has always existed and has been a silent mode of mass production of dwellings in Brazil, operating independently of how the architecture field commonly sees it.

> Self-help is a very old idea. A new idea is that people should not build their own houses. It is only in the last two centuries or so, and in relatively restricted areas of the world, that the majority of people have not had to build their own houses. Historically this has been a function of how far the capitalist division of labour has been directed towards the satisfaction of housing needs (Burgess, 1982, p. 57).

Self-production is the only feasible option for urban residents due to at least two realities. The first is the economic pressure from the formal housing market, reflected in the high prices of land and of commercially constructed dwellings, in their most recurrent iteration, apartment buildings to be mortgaged. The second is the incompatibility between the working practices of formal technicians such as architects and civil engineers with the needs and expectations of low-income urban residents, who buy cheap urban plots but cannot afford the work of formal technicians and thus end up becoming self-producers. The greatest part of the housing shortage in Brazil is concentrated among very low and low-income households. In comparison to the rest of the country, the situation at Belo Horizonte's Metropolitan Region presents more or less the same logic, although it is slightly better for the very poor.

> The inadequacy of publicly supported subsidised housing is compelling a dependency upon the private market for this basic good (house or shelter) with the outcome that the market is segmenting, or filtering out, those who lack in financial ability (Tiwari et al., 2016, p. 4)

According to the World Bank (2006, cited in Tiwari et al., 2016) and confirmed by IBGE (2012a, 2012b and 2013), about one-million new households are formed each year in Brazil, but the formal housing sector builds only around 350 thousand units per year. Historically, Brazil has not invested much on social housing production, so that *self-construction and informal housing markets* have been among the few available housing alternatives for low-income families (Tiwari et al., 2016). The private construction sector has concentrated its efforts on providing housing for urban higher- and middle-income groups. Low-income residents have only been a relative recent focus, confirmed by the rise of popular real estate enterprises, mainly the production of apartment blocks which have begun to dominate the landscape in many Brazilian cities' outskirts.

> Many urban inhabitants self-produce their homes and other everyday spaces, because the very economic system that employs their work force is not able to cope with their demands. A provision that would meet these demands [beyond the mass production of boxes to store people] is not profitable enough for private capital and not urgent enough for a State that has seldom been threatened by the urban poor (Kapp & Baltazar, 2012, p. 3).

The lack of housing that marked the biggest Brazilian cities since 1940 was the consequence of an unbalanced relationship between the developing local industry and the need to provide housing. As a result of the migration of the rural population to big cities in search for work, the urban population began a rapid growth. Local industry, which had just started to expand its markets inside and outside the country, could not dispense with an abundant and capable work force who were settling in the cities. Despite of the extreme need for housing for industry workers, it was decided to reduce the strong attraction that the real estate industry caused as a safe investment (given the rising housing demand) in order to impel the local industry addressed to other sectors. Public investment in housing was always insufficient to meet the demand neglected by private industry, which concentrated its efforts on infrastructure, hydro power plants, and oil exploitation (Bonduki, 1998). During the 60s, Brazilian industry had focuses other than on housing, contrary to what occurred in France, which invested in housing infrastructure in Algeria, or in Scandinavia, which developed a super model of pre-fabricated elements for housing. In these countries, the housing sector ended up driving the development of other fields, such as technology and human resources (Strassmann & Wells, 1988).

> Without access to the traditional dwelling forms, the working population had to build itself precarious shelters, on places without any facilities or urban infrastructure, like favelas or subdivisions in the periphery, which started to amplify the occupied city's area (Bonduki, 1998, p. 249, my translation).

Until 1940 the private sector was responsible for producing social housing for the government, with its focus on rental houses in working-class neighbourhoods, but with insignificant governmental intervention. This situation changed between 1940 and 1960, culminating in the creation of the Housing Financing System (*Sistema Financeiro da Habitação - SNH*) in 1964 and the financing of housing purchases for members of Retirement and Pension Institutes and for employees through their Worker Severance Compensation Found (*Fundo de Garantia por Tempo de Serviço - FGTS*). The SNH was divided into two branches, one addressed to high- and middle- income individuals and the other to low-income individuals, the latter operated by local housing companies, municipal or state.

From 1964 to 1985, during the military dictatorship, governmental intervention started to become stronger with a centralist and authoritarian enterprising state model. At that time, the BNH (Housing National Bank) was created to centralise all resources and to distribute them throughout the country. Those initiatives had no concern for the dwellers, who had no right to participate, either in the managing of the building sites or in the development of the projects. The standard procedure was the financing of new units, produced in large scale mass housing enterprises by private companies. Until the 1980s, slums were simply removed and dwellers relocated, mainly to distant collective housing enterprises. Gradually *favela* upgrading projects and policies started to take place and self-construction was recognised as a solution for low-income families. As a response to popular pressure for participation, PROFILURB (Land Development Financing Programme) was created in 1975, then superseded by PROMORAR (Sub-Standard Housing Eradication Programme) four years later. While the first aimed to prevent the expansion of *favelas* by offering residents alternative places to live, the second began to acknowledge the existence of those settlements and the impossibility of relocating all of them. This was the first federal infrastructure upgrading programme for urban settlements. During the political effervescence that resulted in direct elections, the Self-Construction National Programme (*Programa João de Barro*) was institutionalised in 1984, assisting self-construction collective or individual initiatives. Only families with monthly incomes below 1.5 times the minimum wage could take part in the programme. It was a collective effort between state and municipal governments, which

provided regular plots and regulated the loans for the acquisition of building materials to self-builder residents. Although promising, this programme did not achieve significant results. The 80s, known as the lost decade in Brazil given a terrible economic crisis, was a decade marked by an increase in land prices, the reduction of BNH investments and the consequent intensification of land invasions. The BNH was extinct by 1986 and the federal government started to recognise the failure of the earlier housing policies (Bonduki, 1998; Pasternak & D'Ottaviano, 2014; Bredenoord and van Lindert, 2014).

> From 4.5 million homes built under the Housing Finance System (SFH), financed between 1964 and 1986, only 33% were done for the low-income population, always in collective housing enterprises located in urban peripheries, in areas where the land was cheap, because of the restricted access to basic infrastructure on sanitation and transportation, the lack of education, health, leisure and cultural facilities, as well as the insufficiency of job offers. Those places did not look like real cities. Real estate credit in that period never reached the monthly family income range of between 0 and 3 times the minimum wage, where 90% of the housing deficit was concentrated and continues to be concentrated. The result was an increase in *favelisation* and self-construction in precarious and irregular settlements all over the country (Rolnik & Nakano, 2009, my translation).

Encouraged by the new constitution of 1988, a new paradigm for housing policies started to emerge, in which the removal of irregular settlements would be rejected and cooperative management models would be encouraged. Prior to that, the first regularisation programmes were formulated in 1983 in Belo Horizonte and Recife (Fernandes, 2014). Despite those programmes, access to housing was mostly the result of either unassisted self-help initiatives in occupied or owned plots or by private acquisition of housing units. In 1995, the main method of accessing formal housing started to change when the national economy became stable and the financing system was restructured. The Real Estate Financing System established new forms of funding directly through the capital market. The priority was shifted to consumer loans made directly to dwellers through 'letters of credit'. Oven a period of ten years, the public loan programme granted some 300,000 loans, most of them only to middle- and higher-income families to purchase dwellings produced by the private sector. As a reaction to this situation and its effects on cities, the City Statute was created in 2001, defending the social function of property as a means of assuring access to urban land, which was to be discussed and implemented by the Ministry of

Cities (*Ministério das Cidades*) created in 2003 (Pasternak & D'Ottaviano, 2014; Bonduki, 1998; Maciel, 2011).

> The 2001 legislation also improved on the legal order regarding the regularisation of consolidated informal settlements in private and public urban areas, enabling municipalities to promote land tenure regularisation programmes and thus democratise the conditions of access to land and housing (Fernandes, 2014, p.296).

In 2009, the federal government launched the *Minha Casa Minha Vida* Programme (MCMV), the aim of which was to build one-million new housing units, hoping "to lower the current housing deficit" and "to boost of the construction industry through job creation and increased capital flow" (Pasternak & D'Ottaviano, 2014, p. 250). Depending on their income level, families might receive a subsidy from the state to partly pay for the acquisition of a new housing unit, produced by private companies. As we also note, objectives regarding housing policy were mixed with a policy for jobs creation in the construction industry (Rolnik & Nakano, 2009). On the one hand, the programme had contracted more than one-million housing units with a total investment of about US $25 billion by the end of 2010, including resources from the federal budget and from the FGTS (Workers' Severance Compensation Fund). Although impressive at first glance, the number represented an insufficient contribution to the easing of the Brazilian housing deficit, which had reached more than six-million units in the same year. On the other hand, the programme openly benefited private companies: "the sale is guaranteed with no risk of default or vacancy and without spending on marketing and related costs" (Pasternak & D'Ottaviano, 2014, in Bredenoord & van Lindert, p. 252).

While the programme ostensibly reinforced the collective ideology of ownership as a dream to be pursued, it gave priority to the construction of new units, ignoring the provision for rental housing and for building rehabilitation options. Popular access to well-connected land and adequate urban infrastructure remained (and still remains) problematic. The subsidies benefited mostly families earning between three and six times the monthly minimum wage rather than the poorest, who account for the greatest part of the national housing deficit.

% of urban housing deficit by family monthly income 2012

Income level	< 3 m.w.	3-5 m.w.	5-10 m.w.	>10 m.w.
Brazil	82,5 %	10,1 %	5,6 %	1,8 %
RMBH	76,1 %	13 %	8 %	2,9 %

Fundação João Pinheiro, 2015, my elaboration.

Real estate developers and those who could afford to buy better-located land also benefited, pushing lower-income families to even more distant neighbourhoods. Thus, MCMV increased competition for land and created a high demand for labour. This, in turn, increased the wages of the workers, reflected in the high construction costs which also affected self-producers. In the end, MCMV did not interfere with the old logic of commercial construction, which was to keep the dwellers away from the elaboration of projects and from building sites. Moreover, the quality of the housing was very dubious, reinforcing the stigma of a second class of dwellings for a second class of people. Many buildings started to present technical problems within a few months of their occupancy. The question that remains is whether the supposed benefits brought by MCMV have compensated for the high price that the country and the dwellers had to pay.

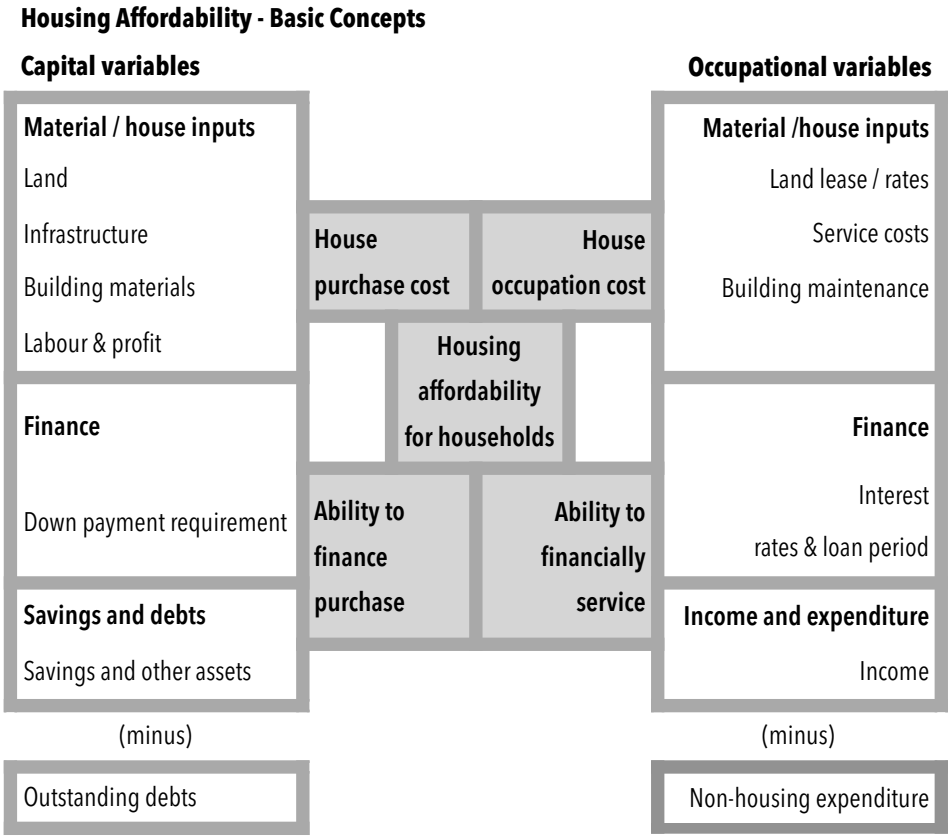
> Historically dwellings have been reduced to a product and the dweller is a passive occupant, whose actions are restricted to limited choices inside a pre-determined roll of options (...) The right to housing is substituted by the mere access to a housing unit defined by patterns from the beginning of the last century (Morado & Tostes, 2011, p. 7, my translation).

> Brazil has experienced one of the most drastic processes of socioeconomic and territorial reorganisation in the developing world as a result of rapid urbanisation since the 1930s: over 83% of the total population of 190 million people lives in urban areas, and there is an enormous concentration of population and economic activities in a very small part of the national territory. (...) Put briefly, rapid urbanisation in Brazil has generated a nationwide urban crisis characterised by the combination of socio-spatial segregation, negative environmental impact, and escalating informal development. The gigantic housing deficit has been estimated as 7 million units, while some 15 million other families live in inadequate conditions. At the same time, there are about 5.5 million under-utilised properties in the country, and an enormous stock of serviced, but vacant, plots of land (Fernandes, 2014, p.301).

Affordability is defined by the combination of the household's earning capability and the availability of savings and credit (Smets, van Lindert and Bredenoord, 2014). In the beginning of the twentieth century, mortgage providers started to use a *housing expenditure-to-income ratio*, equivalent to 25 to

30% of the average household monthly income that could be spent on housing. Although controversial, this schema has been often used, mainly for public policymakers to predict a household's capability to pay rent or to take out a housing loan.

Smets, van Lindert and Bredenoord (2014) believe that affordability would be assured by a reduction in construction costs. To that end, they propose the provision of subsidies through "incremental financing of smaller, short-term loans (...) applied alongside incremental building practices" (Smets, van Lindert & Bredenoord, 2014, p. 11). This point of view fails to consider that other productive arrangements could also assure affordability, as, for example, by means of taking from the hands of private companies the control of housing enterprises.



Mojave et al., 2011, cited in Smets, van Lindert and Bredenoord, 2014, p. 10.

Self-production has demonstrated that it is affordable, although self-producers have counted on very little technical and financial support. The question would then be, what promotes affordability? Under which conditions have self-building initiatives operated that have somehow responded to the demand?

In this sense, and given the increase of self-built dwellings following the extinction of the BNH in 1986, it is pertinent to discuss the only Brazilian governmental programme addressed to self-builders and self-producers, focused on the acquisition of building materials since then.

> It is estimated that 4.4 million dwellings were built between 1994 and 1999 in Brazil, from which only 700,000 followed conventional procedures, which means that they were designed by habilitated professionals and approved by the competent authorities (Ricardo, 2008, p. 61, my translation).

3.4 The importance of the *Construcard*

By means of a federal resolution of August 1998, part of the Individual Letter of Credit Programme from the Federal Savings Bank (*Caixa Econômica Federal*) was addressed to the Acquisition of Building Materials *(Carta de Crédito Individual destinada à aquisição de Materials de Construção),* in a programme that is popularly known as *Construcard*. Because of its unbureaucratic procedures and reduced interest rates in comparison with other types of housing financing, this model of loan attracted many self-producers and self-builders. From the total amount of the loan, 15% was earmarked to pay the manpower and deposited in a savings account in the name of the borrower, who was responsible to find and hire the manpower and to make the payment. The rest was deposited in a kind of credit card, the famous *Construcard*, used by the mortgagee to buy building materials at accredited shops. The use of the card started in 2004, when the programme was consolidated. It became very attractive, especially from 2008 to 2012, when interest rates decreased (Ricardo, 2008; Bastazini, 2016).

There are not many studies on the programme, although it has been very important for self-producers. Many people could not have improved their homes without the *Construcard*, because it provided them the first step they needed.

> (...) any person who wants to build in Brazil, the only assistance a person can have today is the Construcard (Oliver, São Joaquim).

The consultants from the Federal Savings Bank are not authorised to share much technical information about the conditions under which the loans can be currently taken and the information from the bank's website is quite superficial. In general, the programme has been widened since 2004, when about

R$576 million (€190 million) were allocated to the programme. In 2008, this amount doubled and ultimately rose to R$4 bn (€1.3 bn) in 2014 (Bastazini, 2016, p. 149)[9].

In 2008, the loan conditions were quite clear. The programme was addressed to families with monthly income between R$380 (€150) and R$1,870 (€730), who could take loans from R$1,000 (€390) to R$7,000 (€2.740) and pay off the debt within a maximum of 96 months. Interest rates were about 6% per year and formal workers could have a discount of -0.5% on the interest rate (Ricardo, 2008). Since 2014, the affordability of the *Construcard* seems to have been widened, but the maximum loan amount, repayment terms, and interest rates were no longer clear, and began to depend on the financial ability of each individual. Until 2014, borrowers could take up to R$180,000 (€60,000) and had a time limit of up to 240 months to satisfy the debt (Bastazini, 2016).

Of the 32 informants for this research, nine have used the *Construcard* at least one time, mostly in the beginning of the construction process. One of the informants, a very experienced manual worker who had worked in popular partly self-produced constructions, claims that the *Construcard* should address people's needs, which are not restricted only to the acquisition of building materials. According to him, there is a great demand for projects and technicians, besides taxation and other payments which are very burdensome, and which must apply even to informal building sites.

> If they had a credit opportunity more elastic, more popular, that could cover, material, manpower, projects, security... would cover also INSS... (...) Project, legalisation of the projects, to have an engineer. (...) So, you had to provide conditions for this person who is building, you had to have a guy, an engineer, an architect, somebody to be responsible to the work, to have conditions to pay it. But all of it should be previewed (Oliver, São Joaquim).

Despite of the need for some adjustments, this programme offered a real possibility of home improvement for many self-producers. It became very popular and presented a high adherence from low-income residents, mainly because ownership was not a prerequisite, either for formal projects or for the contracting of architects or engineers[10]. The programme also showed low default rates, in

[9] Currency in € are approximated, taking the exchange rate of the correspondent year. In case, please check http://fxtop.com/en/currency-converter-past.php

[10] From 32 informants, nine had used this modality of loan to build and renovate their homes.

comparison with other credit modalities provided by the government. Its great advantage was the relative autonomy of the dwellers in renovating and building according to their everyday possibilities and limitations. Another advantage was the use of resources in as needed, with a high possibility of dissemination. Small improvements like painting, installation of floor tiles, and all sorts of small repairs were very important for the maintenance of dwellings and relatively cheap for the public reserves.

Although the programme created a general positive effect, the analysis from Ricardo (2008) reveals that some sort of technical support could have been very fruitful. It could have helped in the elaboration of constructive details, mainly regarding thermo-comfort conditions and accessibility. Although welcome, the participation of technicians would demand from them a different approach, to avoid a relationship based on dependency and domination.

When self-producers manage to buy a plot in a distant neighbourhood, the presence of a formal technician to oversee the project and to build dwellings rarely takes place. The main reason why self-producers do not hire architects is that, in general, dwellers question what those technicians can exactly bring to the process that would justify their price (Samuel, 2008). Stated differently, the question is whether the product of architects' work is really what the popular audience needs. In the Brazilian case, this mistrust is endorsed by an imbalance between two different *modus operandi*. From the one side, architects offer a package of services which seems opaque to self-producers' eyes[11]. From the other, these residents demand technical solutions for domestic problems, small additions and renovations, or long-term but flexible plans which architects are not trained to provide (Kapp, Baltazar & Nogueira, 2009).

> Most buildings in the formal city are designed under this corporate logic, in which the client is not the user, but someone (an individual or a group) or something (a corporation) who or which will sell or rent the space after its completion. The main problems of this logic of production of spaces are the normalisation of demand and the neglecting of users, leading to their manipulation instead of looking for their true satisfaction (Baltazar & Kapp, 2007, p. 3).

[11] Civil engineers tend to present a more practical scope of services, which includes regularisations, structural dimensioning and accompaniment of building processes, tasks not always covered by architects.

Instead of conventional architectural projects, self-producers need technical and legal advice, new design methods, access to good-quality and low-priced construction materials, especially tailored building technologies, financial support and organised collaborative actions with other self-producers and, most of all, with trained professionals able to work in accordance to this approach. Initiatives from Cuba (*Arquitectos de la Comunidad*), Argentina (*Arquitectos de Familia*), Brazil (*Arquitetos da Família* from Belo Horizonte) and Pakistan (Technical Training Resource Centre, from Karachi) tried to promote exactly that (Diaz, 2002; Livingston, 2006; Nogueira, 2010; Ismail, 2011). Although very significant, those were isolated initiatives and could not alone transform the common perception about self-initiatives on housing yet, nor were they able to catch the attention of local architects' associations.

However self-help initiatives have had advocates since the 70s, it was only in 1996 that the *Habitat Agenda* proclaimed the right to adequate shelter as a universal principle. Recognising self-help as a right, one of the responsibilities of the states would be

> to create the conditions under which the citizens (as right claimers) can fully develop their potential to build and gradually upgrade their own houses in a safe and dignified way (Bredenoord & van Lindert, 2014, p. 58).

3.5 "Metropolitan Vernacular"

While self-production processes characterise a kind of housing production, the concept of *metropolitan vernacular* (Kapp & Baltazar, 2012) defines the kind of constructive practice predominant in self-production processes:

> (...) the expression *metropolitan vernacular* seems just an oxymoron. However, it is precisely this conjunction of popular informal practices and formal construction technologies that characterises huge urban areas in developing country cities, including Belo Horizonte, a five million metropolitan region in Brazil where our research is based. Just like any vernacular, the "metropolitan" is based on learning by doing, imitation and resources at hand. However, the practices to be imitated and the resources at hand are not found immediately in nature but in an urban context, mostly dominated by a heteronomous construction industry. The metropolitan vernacular is like a bricolage from fragments of

> industrialised materials and techno-scientific knowledge (Kapp & Baltazar, 2012, p. 3).

Kapp and Baltazar describe the process of the metropolitan vernacular as a result of three stages in the history of informal settlements. The first stage is defined by "traditional rural vernacular practices", vernacular building solutions, which were brought by the first residents of an area, normally people coming from the countryside. Part of an oral heritage, this knowledge is transmitted through generations and might not be found in books. As an example, the authors present Dalila, one of the first residents of Vila N. S. Fátima, and how she learnt to make wattle-and-daub constructions, using sand, wood and local fibres, more than 60 years ago. Vila N. S. Fátima is one of the neighbourhoods that will be presented in this thesis, where part of the fieldwork was done.

The second stage is marked by the lack of natural building materials in comparison with the rising demand. As a consequence, self-builders started to include "urban" materials, mostly "construction waste, [like metallic roofing tiles, sand and cement], rubble and other materials they would find in dumps and junkyards" (Kapp & Baltazar, 2012, p. 7) into the construction processes and to mix them with natural local resources that were still available. In Belo Horizonte, many *favelas* were used as dumping grounds for big construction projects nearby. Besides, many local residents used to work in the construction industry as well, which still happens: "other common components were prices of cars as, for instance, the windows used together with their mechanisms" (Kapp & Baltazar, 2012, p. 8).

The third stage of this practice has to do with the working conditions faced by many *favelas'* residents, who worked (and still work) in the construction sector[12]. They have partly learnt the application of building methods and materials. Gradually, the components typical of the formal construction sector were incorporated in self-produced building sites. As suggest Kapp & Baltazar, the industry of building materials has been profiting with such numerous and loyal consumers[13].

[12] Nine out of 32 households presented residents who used to work for the construction sector as informal or formal manual labourers, in charge of people in building sites and sellers from building material shops.

[13] Sales of building materials increased 7.4% in 2012, breaking the record of turnover - R$55 bn (approximately €22 bn in 2012). In March 2013, sales grew 8% compared to February, according to the National Association of Building Materials Traders. The reduction of the taxation on industrialised products and favourable conditions for housing credit were the main factors which have influenced those results. (DIEESE, 2013, p. 8).

The concept of *metropolitan vernacular* does not exclusively pertain to *favelas*. Such practices happen in the outskirts of big cities as well. Countryside immigrants also start their lives in peripheral subdivisions, by the purchase of a cheap and small plot of land, where a small hut will be self-built or self-produced. We will see in the case studies of this research that some self-producers recall that their neighbourhoods, at the time of their arrival about 30 years ago, were no more than a patch of bushes - *"aqui tudo era mato"*. Although formal, those subdivisions were in deep need of basic infrastructure, not differing much from *favelas* and clandestine subdivisions.

3.6 The "ordinary", the production and the reproduction of space

The result of this type of construction practice within a type of housing production made by people themselves can be defined as so-called *ordinary* architecture. Introduced by Habraken (2000, p. 60) the term *ordinary* defines a sort of "build environment defined by the act of settlement". Although the discussions about self-help and spontaneous settlements started long before, the Dutch architect was the first to consider ordinary spaces as architecture, characterising it as the places of the common and of the usual. He brought self-produced spaces inside the field of architecture, as architectural objects. Until then, the understanding about architecture was restricted to *extraordinary* buildings, such as museums, mansions, churches, and government and institutional buildings. Habraken strays from the professional circuit of architecture and its monuments and acclaimed locations

> …to the back streets of cities; their apartment buildings, tenements, and townhouses; their suburbs and enclaves of the wealthy are no less fascinating (Habraken, 2000, p. xviii).

In *The Structure of the Ordinary* (2000), Habraken examines self-produced urban fabrics in cities from Asia to the USA, passing by Santiago and Mexico City in Latin America. His objective is to identify and decode general principles of design present in the ordinary built environment. It is a study of the non-planning of dwellings by actors, proposed in three levels: *form* (appearance of space), *place* (appropriation of the space) *and understanding* (control over space) (Habraken, 2000). The analysis presented in the book are interesting because they deal with the self-produced urban environment without presuming them to be inferior spaces because they were made by non-experts.

> For thousands of years, built environments of great richness and complexity arose informally and endured. Knowledge about how to

> make ordinary environment was ubiquitous, innately manifest in the everyday interactions of builders, patrons, and users. Built environment arose from implicit structures based on common understanding. Environmental knowing-in-action was never made explicit, because there was no need for such articulation (Habraken, 2000, p. 2).

Although an interesting analytical exercise, his arguments are sometimes too abstract and of little use. The author defines a theoretical framework with three orders, which underline the forms we observe and which inform our interpretations: the *physical* order, regarding the shape of things; the *territorial* order, which has to do with the space available for things; and the order of agents, a *social* order, made by human organisation and action. I understood this framework as a conceptual tool, but unfortunately it does not reveal how dwellings are produced, their preconditions, or the role of the main actors.

However Habraken has taken conventional architecture out of the focus, his voice remains the voice of the specialist, once he analyses only the form, taking for granted origins and preconditions under which the ordinary built environment has been built. Although having in some passages recognised the human component in the ordinary built environment - "the decision-making works accordingly to the pains and glories of individuals" (p. 160), the decision makers do not appear in his text, and buildings are described mostly as form settings and not as results of socioeconomic conditions. Besides, his tone reflects the typical Global North's discourse that generalises the Global South; for example, when he describes kitchens as if all of them were the same: "the modern kitchen is a system manufactured and so like other durable goods" (Habraken, 2000, p. 71).

A critical description of the self-production of dwellings made by *battlers* cannot be restricted to a description of the form of the dwellings, nor a catalogue of popular architectonic types. *Battlers'* housing self-production is a sort of production of space, not only physical (built space), but also social (relations), since it is governed by social practices, which occur for many reasons. Trying to explain this relationship, I use three arguments elaborated by the French geographer Henry Lefebvre (1991), which help to understand the dimension of self-production as a agglutination of different and, to some extent, complementary social practices.

The first and main argument is that modifications in the physical space happen through people's practices in space. People's actions are social practices, "projected" on space, according to a given mode

of production. Lefebvre suggests that space is a configuration of relations and forms, which presents - "neither a subject nor an object but rather a social reality". It cannot be seen as "an inventory of things" or as "a discourse" (Lefebvre, 1991, p. 116). As confirmed by Bredenoord and van Lindert (2014, p. 59), "self-help processes never develop in splendid isolation from the wider institutional context".

So, social practices in space embody social actions from individuals, alone or collectively organised. Actions from a given social group result from the machinery of the ongoing mode of production. Thus, the second argument from Lefebvre is the notion that "social space is a social product" (Lefebvre, 1991, p. 26). Social spaces are both processes and the results of processes.

The third and final argument is that space is conventionally and traditionally divided according to the social division of labour, working as a receptacle of workers under their functions. People act on space and build space as well, influenced and guided by outsider systems. Again, Lefebvre highlights the dialectical aspect among *battlers* and the spaces they produce:

> Everything that there is in space, everything that is produced either by nature or by society, either through their co-operation or through their conflicts (Lefebvre, 1991, p. 101).

> Every social space is the outcome of a process with many aspects and many contributing currents, signifying and non-signifying, perceived and directly experienced, practical and theoretical (Lefebvre, 1991, p. 110).

Thus, a given space is more than a passive *locus* of social relations. The production and the reproduction of the space depend on the characteristics of each social formation. *Battlers'* self-production are real social spaces, produced and reproduced by real people, as products from a social formation. Self-production is multi-faceted. It is part of a mechanism and it is a product at the same time. Some of its aspects imply dominance, inequality and dependence, while others show that it is a way of smart survival within the system. However, more important than stressing the production of things (self-produced housing) is the discussion about the significance of their reproduction (processes of self-production). In this sense, social relations embedded in the reproduction of self-produced housing units are not simply results of direct relations between individuals, but material relations between people and social relations between things (Marx, 2007). Dwellings are like any other commodities,

products of human labour, to which the use and exchange values are attributed. [14]Housing is one of the components of the quality of life, but are commodities in dispute on the social space as well:

> …an object outside us, a thing that by its properties satisfies human wants of some sort or another. The nature of such wants, whether, for instance, they spring from the stomach or from fancy, makes no difference. Neither are we here concerned to know how the object satisfies these wants, whether directly as means of subsistence, or indirectly as means of production. (Marx, 2007, p. 41)

Self-production made by Brazilian *battlers* is a reaction to the conditions they have to face in their everyday lives, the central focus of which has been to provide their families with some sort of quality of life which the previous generations could not access. With respect to housing, this path is only possible through self-production.

Marx's investigations on the social panorama of the free market, on the real life of the workers and its double aspect between productive activity and desires and illusions to be fulfilled, has driven philosophical studies about everyday life in the 19th century. Lefebvre argues that only through philosophy can people grasp the duality of everyday life, its decadence and fertility (Lefebvre, 1971). In its triviality, everyday life is made up of repetitions and reproductions: time, gestures, actions, habits and social practices. The study of the production enables us to learn about the reproduction of social practices.

Self-production processes do not seem to be reverberations of a subversive character, at least not consciously. Generally, *battler self-producers* do not take part in collective activism or exercise a clear resistance to superordinate classes. They should not be identified as "survivors" who have developed some kind of notion of their own condition amid urban struggles, nor as typical "passive urban poor". *Battler self-producers* live as ordinary citizens "without clear leadership, ideology, or structured organisation" (Bayat, 2004, p. 81-94). On the one side, *battler self-producers* apply pressure on "changing the city more after (their) heart's desire" (Harvey, 2008), since they take control on their

[14] Briefly, the use value of a commodity is defined by its utility and does not depend on the amount of work implied to obtain
its usable attributes. The exchange use is measured by the social working time necessary to produce a commodity (Marx, 2007).

building processes and land use. On the other hand, doing that does not imply that they are exercising real democratic control over the urbanisation process, or in the end, even over their own lives. The *battlers'* phenomenon is more a consequence than a subversion. They are inclined to be *petit bourgeois*, although intrinsically they are only one more type of precarious working class.

> And what he produces, reflects also on how he produces: the indispensable for his subsistence, the rough result of a self-sufficient individualism, is the frustrating miniature of the bourgeois home, isolated, closed, making clear the contours of its possession (Ferro, 1969, p. 61, In. Ferro, 2006, my translation).

4 SELF-PRODUCERS ARE *BATTLERS*

4.1 Low-income groups in the literature and world wide

The literature over the rise of low-income groups in the past is revealing. The observations from Siegfried Kracauer (1889), German journalist and sociologist, and from Charles W. Mills (1916), American sociologist, on the definition and formation of rising new social groups at the beginning of the 20th century in Germany and in the USA can be interesting to highlight the Brazilian process. Kracauer observed the everyday life of typical German salaried workers, as did Mills later in 1959 with the new American white-collar employees. *White-collar* is an expression that has been often used to identify emergent middle classes who in former times used to be clerks, secretaries and other administrative employees. The studies about the German salaried masses and the American white-collar class highlight three main aspects, which help us to analyse the Brazilian case.

The first observation is the role played by their populations. At the end of the 20s, there was one salaried employee for every five workers in Germany. In the early 30s there were about "3.5 million salaried employees (...), of whom 1.2 million [were] women" (Kracauer, 1930, p. 29). Only in industry did they reach more than 1.35 million people. They represented half of Germany's population at that time and mostly worked in banking, commerce, or transport. From 1870 to 1940, the American new middle class increased by about four times (Mills, 1951, p. 63). These numbers represent how important populous social groups are - facilitating significant changes in the social structures of a country or keeping them intact. According to Kracauer, the causes of the rise and increase of the 1930s new middle class were directly related to a different style of economic development towards large-scale enterprises, which transformed the organisational form of the society in which salaried masses were the majority. The Germans increased the apparatus of distribution of resources, expanded social security, and empowered associations to regulate the access of certain social groups to better living conditions. Those transformations relied on the increase of wealth, to some extent accompanied by the distribution of resources and expansion of social security for the poor.

Because of their numerous population and multidisciplinary potential, new middle- income groups, such as the Brazilian *battlers*, represent a lot for nations worldwide. Candidates can win elections if they gain their sympathy. Their consumerist impulses might help to keep some sectors of the country's

economy running and, to some extent, to protect it from difficulties during uncertain times. It is estimated that from 2014 onwards, half of the world's middle class will be situated in emergent countries, and from 2018 onwards, middle income groups - which are many and diverse - will be the majority for the first time in history (Brandi and Büge, 2014)[15]. In 2012, they totalled about 100.5 million Brazilians, 55.05% of the country's population. It was estimated that in 2014 this percentage would reach more than 60% (Neri, 2011, p. 27; p. 95)[16].

The second observation is about seduction. According to Kracauer (1930), companies were used to seduce employees with privileges, offering them a false sense of community, which they actually did not have. "They do keep individuals in a dependent state, to be sure, but they are unable to awaken the collective spirit" (Kracauer, 1930, p. 75). If the seduction comes from giving people what they do not have, a kind of ideological cage has been built in Brazil - not by seductive employers, but by purchasing power, assured by the increase of job offers and regular salaries. Consumerist desires and their immediate satisfaction are recurrent aspects among *emergent middle-income groups* and have nourished their hearts and minds, "hunger of glamour and distraction". About US $6.9 trillion has been spent annually in developing countries by middle-class groups (Court and Narashimhan, 2014, cited in Brandi and Büge, 2014). In 2013 alone, the new middle class was responsible for injecting €320 billion into the Brazilian economy (*A nova classe trabalhadora*, 2015). Indeed, the amount of new household appliances and all kinds of popular consumer goods was remarkable during the fieldwork of this research. I have visited households with four TVs (one in each bedroom and one in the living room) and three big new refrigerators. In this respect, the cultural industry plays a fundamental role. The mainstream of the entertainment industry changed the style of their daily shows to be coherent with the rising social group and to attract poorer people who want to be like the people they see on television - to consume what they consume and to achieve what they do.

[15] Middle-income groups present very different aspects worldwide - in their consumerist patterns, population, and spending capacity. In 2012, the middle class in India represented eight per cent of the country's population; in sub-Saharan Africa, only two per cent. In China, they represented 16% of the country's population, which is equivalent to 200 million residents. The middle classes from Algeria and Bangladesh are relatively small and present a low spending capacity, despite being privileged groups. On the contrary, in Mexico, Rwanda and Colombia, they are larger and more affluent. In any case, it does not matter how large and affluent a country's middle class is in absolute terms, but what they relatively represent to the country's development level (Brandi and Büge, 2014).

[16] Unfortunately, no further projections were made, nor has a new counting of the population taken place so far.

The third aspect regards the lack of collective organisation. As both Kracauer and Mills suggest:

> The mass employees differ from the traditional proletariat in that they are spiritually homeless" (Kracauer, 1930, p. 6).

> Internally they are split, fragmented; externally, they are dependent on larger forces. Even if they gained the will to act, their actions, being unorganised, would be less a movement than a tangle of unconnected contests." (Mills, 1951, p. ix).

Brazilian *battlers* tend to be unrooted and not collectively organised (Souza, 2010). Their fights are individual and each individual, in his or her own way, is to some extent involved by the iconography of a *bourgeois* lifestyle (Ferro, 2006), although deprived of the correspondent social practices and *capitals* (Bourdieu, 1984). They present a silent character, contrary to the great power embedded in them. According to Mills, the white-collar people are "visible but politically voiceless" (Mills, 1951, p. xvii). They have "slipped quietly into a modern society" (Mills, 1951, p. ix).

On the opposite side of the theories on alienation, contemporary observers predict that the "burgeoning" middle classes from Asia, Latin America and Africa will become the mediators of "social progress and democratisation" (Fletcher, 2013, cited in Brandi and Büge, 2014). Because of reduced economic resources, in comparison with the traditional middle class and the rich, new middle classes might present "fewer ties with political elites in the government, and therefore tend to promote a democratic system, in which their rights and private property [are] best safeguard (...)" (Brandi and Büge, 2014, p. 27). This hypothesis holds that, although diverse, urban commons groups from all over are putting pressure on the redistribution of goods and opportunities, also in the form of collective consumption - health care, education, land, shelter, piped water, infrastructure solutions in public spaces, such as street pavement and parking, oftentimes provided by themselves (Bayat, 2004).

These are phenomena which are happening all over the world. Because of low salaries, Egyptian teachers started giving private lessons to their own pupils, creating a black market in the education sector, earning the equivalent of 25% of the monthly income of families, causing great discomfort and further problems in Egyptian society. Between 1980 and 1992, the land area of Greater Tehran expanded from 200 to 600 square kilometres, and more than one hundred informal communities were

created around the city. Self-production is one of those battles and similarly, in their diverse local versions, has always happened:

> (...) the marginals may be able to take over a plot of land to build shelters; they may tap running water or electricity illegally from the main street or their neighbours; they may secure a job on the street corner by selling things; and they may be able to bribe or dodge the police every now or then. But they cannot get schools, health services, public parks, paved roads, and security - the social goods which are tied to larger structures and processes, to national states and the global economy (Bayat, 2004, p. 90; 98).

Although presenting the same political potential and social strength, the Brazilian case seems to be more focused on individual gains, in the unique form of consumer items, which have replaced social rights - household investments in health care, education, transportation and housing. Education has been assured by private schools, health care by private insurances and transportation by one private car for each adult. In this sense, the self-production infringes that logic, still strongly competing against popular apartment blocks, financed for decades by young families dreaming of a supposed safe haven for their children. As argued by Mills (1951) a half-century earlier, new rising social groups have much to lose and will try whatever is necessary to maintain their new status. The history repeats.

As India aims to become the third largest consuming global economy, its situation is similar to Brazil's. The so called Indian "neo-middle class" has improved from a generation ago, mainly in income and education, as they aspire to a better standard of living (Singhi & Jain, 2016). In Brazilian society, the middle class (including higher-, middle- and lower-middle groups) is already the largest economic segment. In India this will happen by the year 2025, when they will be responsible for 60% of Indian consumption. Currently they are responsible for about 40%. Most economic resources already are and will be spent on education, leisure and telecommunications, with the purchase of cell phones and internet devices. The rise of an Indian neo-middle class is happening together with some social progress, such as changes in the role of women, the optimism of young generations about their country, and changes in family configurations from nuclear households to singles.

The rising of new middle classes has been one of the by-products of the social inequality, a global sickness caused by the current mode of production. The role of low middle-income groups is briefly characterised as the

> (...) silent, protracted, but pervasive advancement of ordinary people in relation to the propertied and powerful in order to survive and improve their lives (Bayat, 2004).

During the first decade of this millennium, the rise of a supposed Brazilian new middle class has attracted the attention of academics, government institutions, and the national media. The atmosphere was one of a general hope that Brazil had "finally" started to grow and to become...

> (...) a Germany, a France or a United States, where the "middle classes", and not the poor, the workers and the outcasts in the periphery of capitalism, shape the basis of the social structure (Souza, 2010, p.20, my translation).

Definitions of who are middle-class individuals are always imprecise and controversial. Empirical studies have adopted two different approaches. One of them relies on observable statistical data, such as income and consumption levels, reducing the understanding of middle groups to economic layers. The other one is guided by the self-perceived status of middle-income groups.

4.2 Brazilian *battlers*

The rise of Brazilian *battlers* has been interpreted according to two similar approaches. One side endorses the idea that a new middle class has arisen in Brazil. The phenomenon is measured by monthly family incomes, sustained by the evolution of economic estimations. Almost totally contrary to this understanding, the other side focuses on the backgrounds of this economic rise, suggesting that there is no emerging new middle class in Brazil. Instead, a precarious working class has arisen, with the role of being an "army of soldiers" of the work and of the consumption typical of the new flexible capitalism. Consumption levels do not imply quality of life.

This approach posits that the everyday real life of these individuals and their families,

> (...) their actions, reactions, behavioural dispositions and all kinds of everyday concrete attitudes, conscious or unconscious, have nothing to do with the understanding of middle class in the sociological tradition (...) (Souza, 2010, p. 46, my translation).

Traditional middle classes are privileged social groups which have monopolised cultural and economic *capitals* (Bourdieu, 1984), and therefore have accumulated symbolic assets, which continue to distinguish them from the supposed new middle class. This interpretation is fundamental for this research, because it reveals the exegesis of the rise of the *battlers,* presenting the conditions under which this rise has taken place and revealing their real living conditions. This has a direct impact on housing and on the way the *battlers* have achieved it.

Economic and non-economic assets are defined by Bourdieu (1984) as *capitals*. *Capitals* can be symbolic, social and cultural, which are reverted to power and manipulated to guarantee the social distinction of some groups of similar lifestyles and their consequent domination over others. People organise themselves according to the power acquired by the volume and relative symbolic weight of the different types of capital they have. For example, a family can have great economic capital and little cultural capital; for example, an individual might have money but no diplomas. On the other hand, a person can have a high income and maintain a lifestyle typical of popular groups (Nogueira, 2010). As defined by Bourdieu:

> (...) the social rank and specific power which agents are assigned in a particular field depend firstly on the specific capital they can mobilise, whatever their additional wealth in other types of capital (Bourdieu, 1984, p.107).

Moreover, among economic, symbolic, social and cultural capitals, space is an achievement that defines another type of capital, which in turn also implies social distinction (Centner, 2013):

> (...) it is useful to see space itself as a resource that groups attempt to control by deploying different forms of capital (cultural, social, economic) to make claims on the city. This involves procuring the power literally to take place, a kind of spatial capital (Centner, 2013, p. 248)

Therefore, social classes cannot be defined by only one possession, as Bourdieu emphasises, whatever it is - capital, sex, age, social origin, ethnicity, educational level, or income. A social class is defined by the structure of the relations established because of those possessions and by the effects that this structure has on the social practices from an individual or a group.

In this sense, processes of cultural, "emotional and affectionate transmission of values" are more important than economic resources. These processes depend on family structure, on schooling, and on the most diverse social practices of each group that individuals belong to. Bourdieu (1984) defines those processes as *Habitus* - a set of mental schemes, connected with a social trajectory (Setton, 2002). *Habitus* act according to our repertoire of *capitals* and create in us a sense of belonging to this or that social group. In different words, the *Habitus* is "a cultural matrix that influences people to make their choices" (Setton, 2002, p. 61, my translation). It is a system of individual schemas, constituted of social inclinations and of practical experiences. The *Habitus* guides social functions and everyday actions. It is

> governed by historically constructed social codes, like an internalised and naturalised booklet that dictates behaviour, places, music, and clothing. Throughout life, new practices are continuously incorporated as a result of the dispositions of each individual and, above all, of the spaces or social fields in which they operate. Therefore, the *habitus* is never static, but can change (Nogueira, 2010, p. 43, my translation).

Money and other forms of economic resources play an important role in the configuration of our *habitus*, but they are not necessarily more significant than other types of resources, equally able to empower individuals, according to the values of each social group. Depending on the *habitus*, social capital and symbolic capital may have a higher value than economic capital for any particular social group.

Therefore, the *habitus* defines the social distinction through a number of social dispositions, which form the taste of each individual or group. In this sense, the "popular taste" is built on a popular *habitus*[17]. According to Bourdieu, the popular taste finds its habitat within popular classes, where it is governed by the "choice of the necessary" (Bourdieu, 1984, p. 373) - technically, practically or functionally. The taste "is imposed by an economic and social necessity condemning 'simple', 'modest' people to 'simple',

[17] Normally the popular taste "varies inversely to the educational capital" (Bourdieu, 1984, p. 8).

'modest' tastes" (Bourdieu, 1984, p. 380). This was a characteristic clearly observed in the *battlers* during the fieldwork. As we can see below, in a conversation between two informants and me during a fieldwork visit. The husband, a doorman with a migration background, cannot admit to himself that he owns a house, as if he did not deserve this achievement, or that a decent house was not for someone like him. The new condition does not fit his *habitus,* still connected to the past, when poverty was dominant in his life. When asked if he was happy, he answers:

> - Look, I don't complain. For me it is all good. In comparison with the conditions I had before, I do not say I have a house, I have a hut. But for me it is fine. I don't complain. (says the informant)
> - Do you think this is a hut? Why is it not a house, just a hut? (asks the researcher)
> - Well, I don't think... I have, I live, no... I feel well. I don't pay rent, but to say I have a house... I don't know... (answers the informant)

This informant, as all other *battlers,* is not used to having a good and comfortable life, although he faces everyday battles to maintain it. As Souza (2010) explains:

> (...) this class has earned its place in the sun by an extraordinary effort: its ability to withstand the fatigue of many jobs and shifts, the double journey between school and work, the extraordinary capacity for saving and resistance to immediate consumption, and as or more important than all that was said, to an extraordinary belief in themselves and in their work (Souza, 2010, p. 50, my translation).

For that reason, the optimistic idea that a new middle class has arisen in Brazil yields to the critical argument that those individuals form, in fact, a "new precarious working class" (Souza 2010, p. 26) whose social practices are essentially different from those typical of the traditional middle classes. Despite an increase in their purchasing power, *battlers* still must work extremely hard for better living conditions[18]. Brazilian society has really started to change - the social inequality has begun to diminish - but the time and the conditions needed to transform its fundaments are not yet enough. On the one hand, it is true that *battlers* have achieved decent dwellings, better education, health care, and a private car to go to work. However, it is necessary to make clear that security, education, health care, transportation and housing are not social rights, but are services or commodities achieved through

[18] An example of that is the self-production itself. As a type of self-help initiative, which is not a choice, dwellers are twice exploited - first at work and secondly in the construction of their dwellings (Ward, 1982, p. 10).

private means, which *battlers* are now capable of affording. On the other hand, *battlers* do not enjoy the privileges of the traditional middle class, which have assured them the access to such services and possessions over generations.

Hence, the socio-economic situation of *battlers* remains vulnerable, because it strongly depends on economic resources which come uniquely from their labour. In turn, access to labour depends on a flourishing economy that is able to provide working opportunities, and on the qualifications and preparation of the working class to compete in the working market. On the one side, *battlers* are no longer economically poor, but on the other, they remain exposed to the insecurities typical of neoliberal working practices. They are surrounded by the threat of poverty, remaining relatively close to the border with their previous condition, or the conditions of the previous generation. Their fear is to go back to the *ralé* (Souza, 2011)[19]. In a broader sense, *battlers* remain poor:

> The direct interconnection between consumption and social mobility defines economic resources as the main criterion of the configuration of the social structure, relegating for a second level, cultural, social and political resources (or capitals in the sense of Bourdieu) (...) The true poverty is not the lack of money, but the lack of money in a situation in which you can do nothing without it (Kapp & Silva, 2012, p. 31).

According to Souza, the new middle class is a trending topic because "it has to do with the kind of capitalism and the kind of society we want to build for ourselves" (Souza, 2010, p. 39, my translation). Neoliberalism demands a new precarious worker, "unrooted, without class identity and without attachments to the major society" (Souza, 2010, p. 37, my translation).

4.3 Behind the rise

Souza's approach is not based on pure economic or demographic criteria, such as income levels or GDP per capita, but rather on the socio-cultural genesis of the class struggle and its manifestations in the society. At the same time, his concept of social class goes beyond the Marxist approach, focusing on the social position of a given group in the structure of the production:

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[19] *Ralé* is the provocative name given by Souza to the lowest social class of the Brazilian society, just below the *battlers*. The *ralé* are individuals without cultural or economic capital, and deprived of the social, moral and cultural social preconditions that would allow that appropriation (Souza, 2011, p. 21, my translation).

> The liberal economy as well as traditional Marxism understands the social classes only "economically", in the first case as a result coming from the income and in the second, as a role in the production. Both understandings hide all factors and social pre-conditions - emotional, moral and cultural - which constitute the differential income, mixing cause and effect. To hide the non-economic factors of the inequality is to turn invisible two issues which allow us to understand the social inequality as a phenomenon: its genesis and its reproduction over time. (Souza, 2010, p.23, my translation)

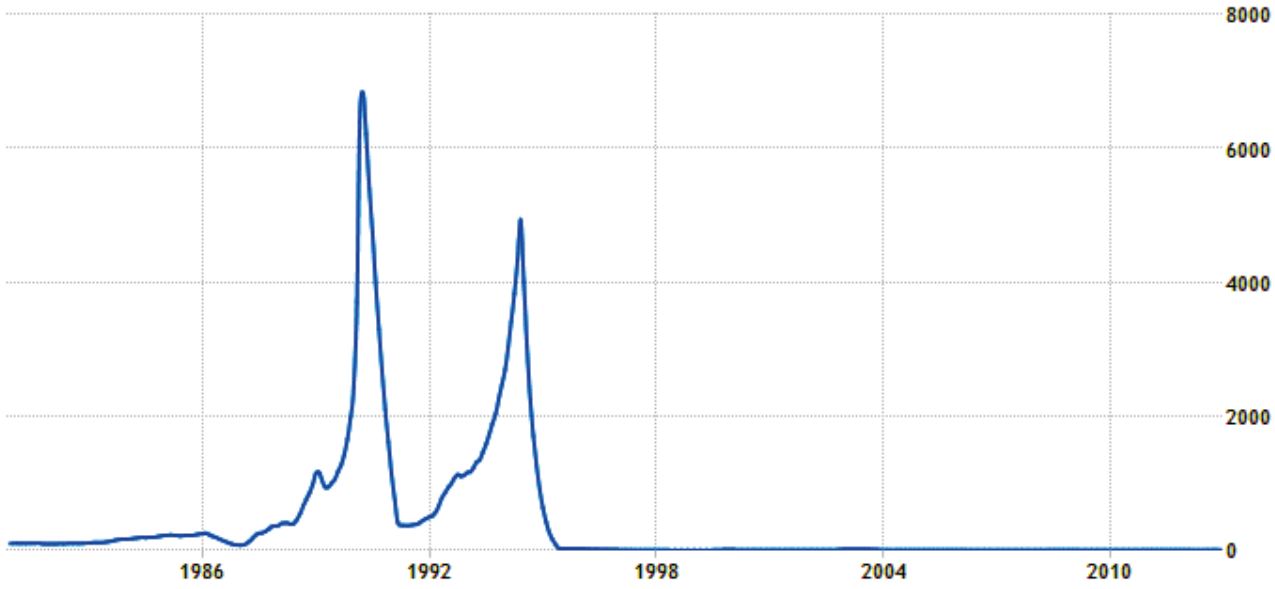
Although economic gains alone are not able to reduce social inequality, since it strongly depends on the redistribution of resources, the economic component of the rise of Brazilian *battlers* had a specific role in the recent reduction of Brazilian social inequality. The implementation of fundamental social programmes would have been more complicated, or maybe even unfeasible, without some of the latest changes in the Brazilian economy which have directly benefited the poorest, for example, the reduction of inflation rates. The economic stabilisation gave the necessary support to social programmes related to income distribution, access to education, health care and working positions. However, economic gains of the first decade of the twentieth century in Brazil ended up creating an over-dimensioned feeling of equality and access. But this was only an embryo of social transformation - recalling Souza, we still have a "precarious working class", the *battlers*, instead of a new middle class. While we cannot deny that socio-economic conditions have improved and levels of inequality have decreased, the typical Brazilian *battler habitus* is more shaped by the possession of social and symbolic capitals than by wealthy economic conditions.

The economic component that has influenced the socio-economic rise of *battlers* is basically the combination of monetary stabilisation with inflation reduction. It was a process that started to take place in the middle of the 90s, during the government of president Itamar Franco (1992-1995). After two decades of military dictatorship (1964-1985) and the disastrous election of Fernando Collor in 1989, which culminated in his reassignment in 1992 to avoid the consequences of an impeachment process,

Brazilian workers were devastated and exhausted. Yet the population had still another terrible enemy to fight - hyper-inflation rates, which have accumulated more than 13[15]%[20] between 1979 and 1994[21].

Inflation is a motor for social inequality, since it contributes to making the poor even poorer and to increase the wealth of the rich. High inflation rates benefit the rich because they can profit from bank investments given high interest rates. On the contrary, the poor are those who depend on their salary to cover their domestic everyday expenses in cash. With high inflation rates, a person's salary alone cannot meet the expenses of the day. Hyper-inflation rates resulted in a very great social inequality, from which Brazil has not yet recovered.

In 1989, Brazil's wealthiest 10% owned about 50% of the total emoluments of the country. In contrast, the poorest 50% owned only 10% of the national wealth. The first graphic represents Brazilian inflation rates from 1980 to 1995, and the second, the rates from 1995 to 2012. A significant and stable decrease is observed from 1995.



Brazilian inflation rates from 1980 to 2012.
Trading Economics, 2017.

[20] 13.000.000.000.000.000%

[21]As systematised by Leitão (2011), the accumulated inflation rate in Brazil from 1979 to 1994 was 13.342.346.717.617.70% - yes, you read it correctly!

After many tries, Itamar Franco's economic team, this time led by a former Minister of Economy, the sociologist and neoliberal Fernando Henrique Cardoso, adopted new strategies to stabilise the national currency. Some of these strategies were the imposition of severe fiscal policies, the privatisation of many public institutions, which is still seen as controversial and unfair, the balancing of public finances, and the creation and cautious implementation of a new currency, through a "key-step" index, the *URV* (Unit of Real Value). The *URV* would slowly substitute the new currency, the *real*, which is still the national currency. The Plano Real succeeded and opened the door for monetary stabilisation and the end of high inflation rates.

> "It was after the *Plano Real* that I finally managed to buy what I needed to finish the construction of my house. Before, we went hungry in order to buy a package of cement, or tiles. After the *Real*, if the cement cost x in one month, in the following month it costs the same x and we managed to plan" (Testimony of Valderes, a doorman from Recife, extract from Leitão, 2012, p. 228, my translation).

Fernando Henrique Cardoso decided to run for the presidency and won two elections in succession, remaining in power from 1994 until 2002. During his terms in office, the process of economic stabilisation was then consolidated. It was also during his presidency that income transfer programmes started to be created or restructured. These social programmes became more significant than the out-of-date models that were hardly representative and were very restricted regarding their scope, but were still very limited in comparison to what the programmes would later on become[22].

The social component of the *battlers'* social rise became stronger and more decisive with Cardoso's successor, the leftist former president Luis Inácio Lula da Silva, also elected twice consecutively (2003-2006 and 2008-2010) by the Workers' Party. He surprisingly maintained the economic order once implemented, retaining some measures which he had claimed were unfair during his campaign. In spite of that, during this period the continuation, enlargement and unification of social programmes with the objective of reducing social inequality took place.

[22] *Bolsa Escola, Bolsa Alimentação, Programa Auxílio-Gás (*National Programme for Minimum Income attached to Education, Alimentation Funding, Programme Aid-Gas) (Rocha, 2011).

During that time, in 2003, the well-known social assistance programme *Bolsa Família* was created. The programme is technically a conditional mechanism of transfer of income to very poor and poor families (with children under 17 years-old), whose *per capita* income remains under R$170 (€46) (CEF, 2017). The benefit is directly transferred to women. In compensation, the families must see to it that their children between 6 and 17 years old attend school, and pregnant and breast-feeding women are required to regularly visit the doctor and to have their children vaccinated. *Bolsa Família* Programme unified and amplified the programmes begun in Cardoso's term, in a unique programme which began to be centrally administered by the Social Development and Hunger Combat *(Ministério de Desenvolvimento Social e Combate à Fome)*[23]. The positive effects of the *Bolsa Família* Programme confirmed that small income transferences, when well done, have a strong impact on the reduction of social inequality, since economic resources are decisive for the exercise of citizenship in Brazil (Rocha, 2011).

As another famous assistance programme from Lula's term is the so-called *Minha Casa Minha Vida* (My Home, My Life). It was launched in March of 2009, promising easy and cheap access to housing for low-income families through the construction of new housing units. Although it was a government programme ostensibly designed to assist low-income citizens, it primarily favoured the private sector, since the production of housing units was all done by private construction companies. The real idea of MCMV was to increase the production chain in the civil construction sector, responsible for an average of 14% of Brazil's GDP, together with real estate activities, between 2002 and 2012 (CBIC, 2017). MCMV is a mass housing production strategy, very distant from users' needs, which in reality is not able to help the poorest families - those who had an income below three times the minimum wage[24]. The MCMV programme was also connected to another polemic programme, launched by ex-president Lula - the PAC, or Growth Acceleration Programme.

The *Programa de Aceleração do Crescimento* (Growth Acceleration Programme) was created in 2007 with the purpose of supporting the implementation of social, urban, logistical and energy infrastructure projects, all executed by private initiative, in order to accelerate economic growth. Although

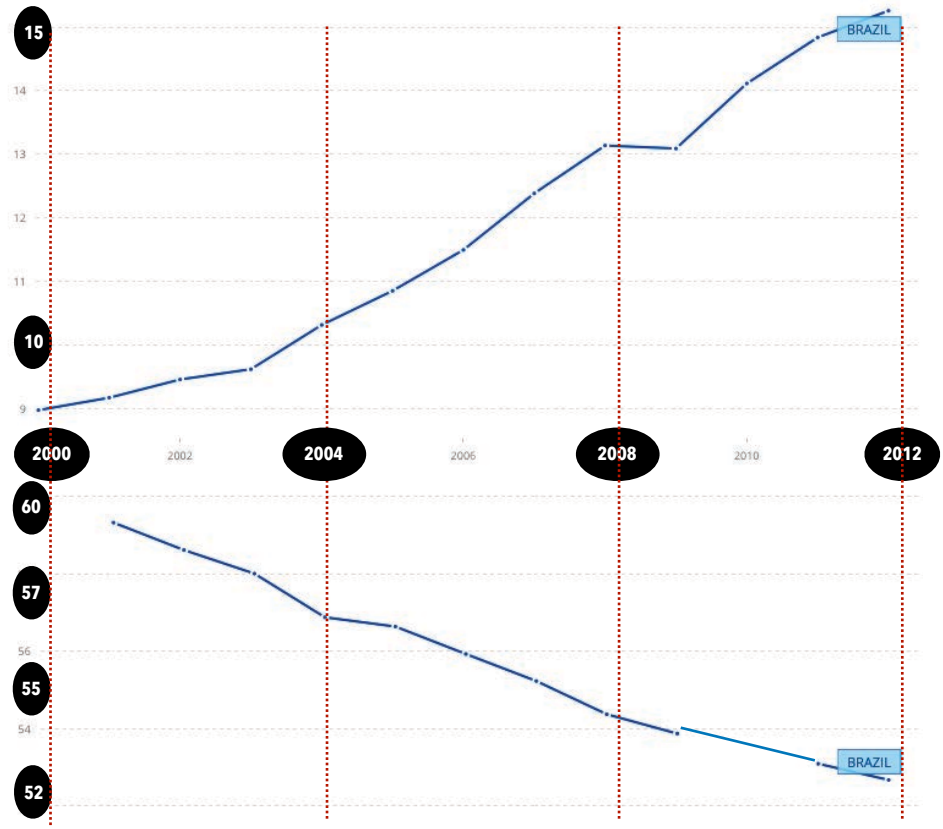
[23] Since its creation in 2003, *Bolsa Família Programme* have expanded from attending about three million families to about 14 million (Extracted from http://www.caixa.gov.br/programas-sociais/bolsa-familia/Paginas/default.aspx, accessed in 08-02-2017).

[24] For more information about MCMV, please see Maciel, A. (2011), Chapter 4.

controversial, given its almost unlimited support of big construction companies, which profited as never before, it was a strategic economic weapon against the global financial crisis of 2008-2009. It assured employment and income for many, which in turn ensured the continuity of consumption of goods and services[25].

Such and other policies were maintained by Lula's political ally, the next former president Dilma Rousseff (2011-2016). Her term was very important for expanding access to education through mechanisms of relaxed entrance requirements and financial aid. Rousseff, after being elected for the second time, suffered a polemic and controversial impeachment process which removed her from office in 2016, two years before the end of her second term.

Brazilian evolution of GDP *per capita* PPP (U$1.000 x time) and of GINI index 2000-2012.
The World Bank, 2017.



From the middle of the 90s to 2012, the association among a) the economic stabilisation started in 1995, b) the creation of a number of social programmes started in 2002, c) their integration and expansion in 2003 and d) income transference and active minimum wage policies, has resulted in the improvement of the purchasing power of the poor together with a certain decrease of social inequality levels, as we can see in the evolution of the GDP per capita PPP26 and of GINI Index from 2000 to 2012.

[25] "If there is not enough purchasing power in the market then new markets must be found by expanding foreign trade, promoting new products and lifestyles, creating new credit instruments and debt-financed state and private expenditures" (Harvey, 2008, p. 3).

[26] A PPP basis is more useful when comparing living standards among different nations.

GDP per capita PPP expresses national wealth, including cost of living and inflation rates. The GINI Index tells us about the level of social inequality in each nation. It is a measure of the relationship between the wealth of a nation and its distribution among national residents (The World Bank, 2017). The graphics demonstrate that during the same time period, the economic wealth of Brazilian families increased (first graphic) while the social inequality diminished (second graphic).

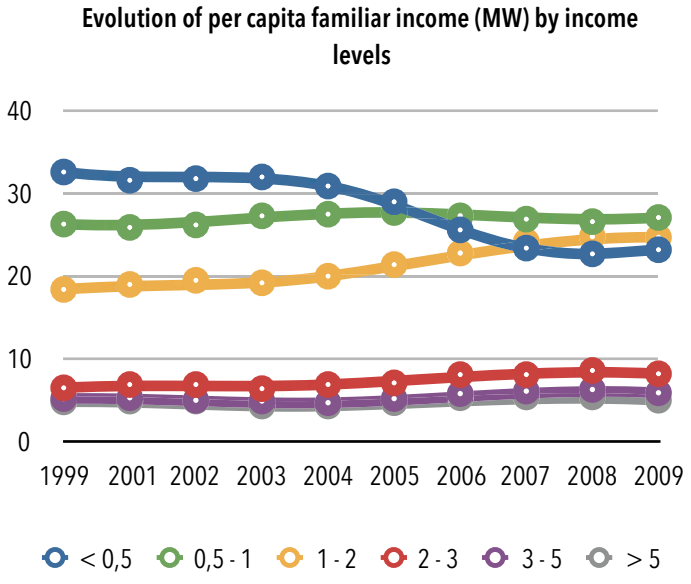
Even based on economic indicators, Pochmann (2012) also asserts that there is no Brazilian new middle class. According to him, there is a general interest of large global institutions in diffusing the supposed success of neoliberal globalisation in Brazil and in other countries on the periphery of capitalism. He presents two tendencies related to income and to property in Brazil during the fifteen years that followed the creation of the *Plano Real* in 1994.

From 1995 to 2004, the relative income resulting from work (salaries) had decreased 9% in comparison to the national income. Conversely, from 2004 to 2010 the salaries accounted for more than 10% of the national income. This change was strongly influenced by the overall economic growth, which caused an impact on the productive structure and expanded the working market. Popular social classes based on the work force were strengthened, and there was a positive effect from social policies supporting the poorest, the raise of the minimum wage, and the increase of income transfers. The Brazilian minimum wage rose by one-third in real terms during Lula's first term (Bertelsmann Stiftung, 2013). The labour force participation rate increased and the working class gained new members, who started to be identified by some as a new middle class (Pochmann, 2012).

> Even with the restricted educational level and the limited professional experience, the new service occupations, absorbers of enormous human masses rescued from poverty conditions, allow an undeniable social rise, although still far from any configuration other than the working class. Whether for the profile and personal attributes, the bulk of the emerging population does not fit into serious and objective criteria that can be clearly identified as middle-class. They are associated, rather, with the characteristics of the popular classes, which, by raising the yield, immediately increase the pattern of consumption (Pochmann, 2012, p. 10, my translation).

Pochmann's hypothesis is that the general elevation of *per capita* income and the reduction of inequality has to do with the increase in the number of salaries which are derived from work - the salaries of those who depend on work to survive. In addition to that, unemployment rates have decreased (since formal jobs increased), and so did poverty. At the same time, the relative burden derived from property profits (interest, profit, renting and land gains, coming from those who have money in the bank and properties - the rich and upper-middle class) declined by about 12%. That is to say, the amount of earnings of those who depend on their salary to survive was more significant for the country's economy than the profits from the rich.

Moreover, when we observe the evaluation of the national *per capita* income and the GINI index from 1960 to 2010, we see that after a long period of imbalance from the middle of the 70s up to 1994, the *per capita* income slightly rises and at the same time the GINI index decreases, becoming clear and stable up to the first years of the current millennium (Pochmann, 2012, p. 15). In 2010, Brazil achieved its smallest inequality rate since 1960. The richest 10% grew by 10.03% and the poorest 50% by 67.93% (Neri, 2011).

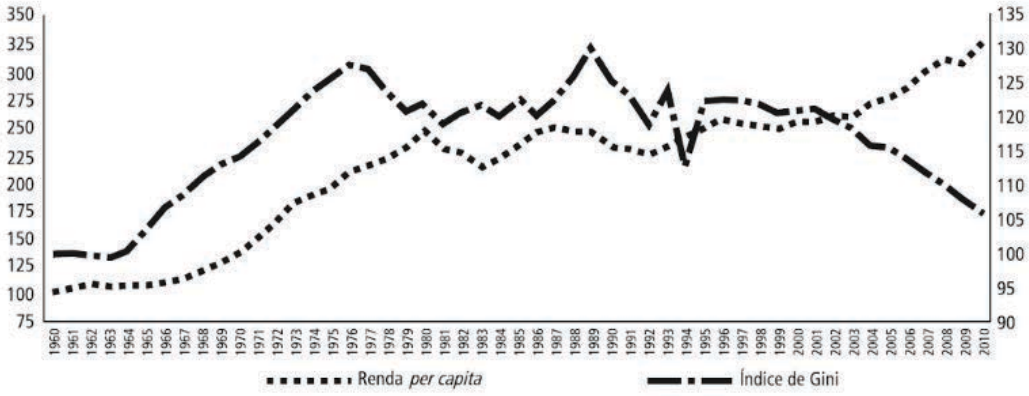


Evolution of *per capita familiar* income 1999-2009.
IBGE / Ipea, cited in Pochmann, 2012, p. 15.

Economic Layers according to total family income*		
	R$	€
A B	> 5.174	>2.121
C	1.200 - 5.174	492 - 2.121
D	751 - 1200	308 - 492
E	< 751	< 308

*values from 2011. To check current values, http://fxtop.com/en/currency-converter-past.php

Neri, 2011, p. 82, my translation.



Evolution of national *per capita* income and GINI Index 1960 - 2010.
IBGE / Ipea, cited in Pochmann, 2012, p. 15.

> This material and symbolic revolution of the new capitalism is the contradictory and ambiguous sea, that has permitted the rise of the Brazilian battlers (Souza, 2010, p. 55, my translation).

Although many scholars have already confirmed that regular jobs make a substantial difference for the poor and middle classes, informal jobs have also played a role, despite a kind of idealised entrepreneurship. Many *battlers*, as we will see with the case studies of this research, have more than one income source, with at least one of them being informal. Most of them have a secure job and combine that with informal income. The same individual logic take place in the family. One family member has a more stable position while others work in informal occupations, which, despite some level of insecurity, permits them some flexibility and sometimes ever a higher income. In general, *battlers* count on a certain level of security, but also have a sort of "plan B".

Contrary to this approach, and endorsing the idea of the rise of a real, new middle class, Neri (2011) views the Brazilian new middle class as an economic layer, and not as a social class only defined by family *per capita* incomes[27].

[27] Monthly income of the family divided by the number of family members. This method allows computation of the individual average income, since bigger families might have a higher income but at the same time, higher expenses, while the opposite happens with smaller ones. "In order to quantify the layers, we calculated the *per capita* household income and then expressed it in equivalent terms of total household income, from all the sources" (Neri, 2011, p. 82, my translation).

The family is the basic observation unit used by the Brazilian Geography and Statistics Institute *(IBGE - Instituto Brasileiro de Geografia e Estatística)* on the National Research by Household Samples *(Pnad - Pesquisa Nacional por Amostra de Domicílios),* for soe time conducted by Neri, and later on by Souza. According to Neri, "about 39.6 million people entered in the so-called Class C, another name given to the supposed Brazilian new middle class, between 2003 and 2011" (Neri, 2011, p. 27). In 2009, this economic layer corresponded to about 50.45% of the population and in 2011 increased to 55%, corresponding to 100.5 million Brazilians with monthly incomes between R$1,200 and R$5,174 (Neri, 2011).

The Federal Government had made a great publicity on the rise of the so called Brazilian new middle class. The topic received special attention from the Strategic Affairs Secretary (*Secretaria de Assuntos Estratégicos*), created during the term of President Lula da Silva. The project "Voices of the Middle Class" *(Vozes da Classe Media)* was created with the aim to get to know better the Brazilian middle class in order to guide the elaboration of adequate public policies. In cooperation with the Federal Savings Bank (*Caixa Econômica Federal)* and United Nations Development Program, the project had two phases and published four brochures between September 2012 and August 2013, each one with a different focus. Besides an introductory edition, the other three shared information on inequality, heterogeneity and diversity, entrepreneurship and salaried jobs (Governo Federal, 2012a, 2012b; 2013a, 2013b). Based on the information from the four brochures, the Brazilian Strategic Affairs Secretary defines the new middle class by a group of characteristics, which appear in the text as phenomena, exclusively derived from the success of government policies, and not as social practices, dialectic catalysers (results and contributors) of the current economic system. I classified the aspects mentioned in the brochures according to knowledge fields, as indicated in the next table.

Brazilian new middle class according to SAE (Strategic Affairs Secretary)

Housing	The acquisition of housing is preferred in spite of rent.
	The appearance of the dwellings matter.
	Dwellings are shared with working space.
Consumption	Strong consumerist impulse. More than nine-million aimed to purchase a private car in the next 12 months (new or second-hand).
	Maintenance of popular lifestyle, even with economic rise.
	Make use of credit opportunities and loans.
Education	Young generations study more. About 68% will have a higher degree than the previous generation.
	Preference for private universities. Traditional ones are avoided.
	Preference for degrees which are relatively uncomplicated to get a place.
	The diploma is the focus despite the engagement in the university´s atmosphere.
Work	Flexible and precarious jobs are common. (Low salaries, no social security, no vacations, no payment of extra hours).
	Reduced access to best job opportunities
	Ethic in hard work as example to younger generations
Origins	Poor
Healthy	Men have a shorter life expectancy than women.
Social relationships	Structured families with traditional values
	Empowered women
	Strong connections through family and neighbours
Future	Optimism about the future
	Future is not planned in detail - "go with the flow"
Religion	Religious faith, many times conservative, devoted to neo-charismatic churches

Source: Elaborated by the author, 2017.

If we build our own vision about the *battlers* using the best of both approaches, we can understand them based on their everyday social struggles, taking into consideration some economic improvements.

In this sense, *battlers* could be characterised by a general lack of erudite cultural, as well as educational, capitals defined by titles and degrees, combined with reduced economic capitals in comparison with the traditional middle class. Although *battlers* can today afford more goods than before, they are still consigned to low-salaried jobs. Unlike the former German *salaried masses*, *battlers* are not accustomed to saving money. When and if they do, they will spend it soon with the next demand - possibly adding a room to the family home. Normally they do not have any kind of monetary investments, like special funds or foreign currency, but have to survive on their salaries. They have been frenetic consumers of mass products - household appliances, electronic gadgets, vehicles, clothes - whose purchase has been facilitated by credit opportunities. By consuming popular products from the cultural industry, they evince a typical popular taste - which is, by the way, not common among most architects, who are trained to develop a different taste, specific to their field. If there are opportunities for qualifications for them to compete in the working market, *battlers* are very much able to rise socially and to do it quickly. *Battlers* are pro-active and have reached some material advancements, followed by an improvement of their collective self-esteem and social recognition, encouraged by the cultural industry which has been attentive and participative in this social change. In spite of that, *battlers* are not politically active, not affiliated with trade unions, are rarely officially engaged in their communities, and do not present any class identity. *Battlers* tend to make their choices based on their immediate needs and short-term achievements, rather than long-term fixed plans. Most of them choose a familiar local life instead of an individual global life, staying close to relatives in the same neighbourhood even after some economic advancement. Very often they live all together in the same house, or on the same plot, sharing household expenses in order to expand their consumerist capacity. They are the present and future generations, the individuals who used to belong to the bottom of Brazilian social pyramid, the poor.

In this sense, the process of construction of a *battler habitus* is mediated by the coexistence of references and personal assets, mostly non-economic, influenced by recent economic gains. Brazilian *battlers*' capitals, including their spatial capital, influence their social practices and lifestyles, openly displayed on their dwellings. *Battlers*' dwellings confirm that the lack of resources (again economic and non-economic) and their correspondent *habitus* contribute to the rise of self-produced enterprises as a response to popular demands on housing, not attended by conventional housing provision methods in Brazil.

Consumption patterns have changed not only in Brazil, but also in India and China, where expenditures for housing have also risen. Although diverse, demand for housing is, of course, a common factor among middle-income groups globally. Most of these groups find in self-building and self-production uniquely possible ways to access housing. This phenomenon is not exclusively from Brazil or from Latin America, but has been happening in all other emerging economies. Informality in housing - self-production is only one variant - has become an important tool for social mobility, and goes beyond housing production. It is the "core of family stability" and a guarantee of a greater degree of financial security.

III

Fieldwork, Case Studies and Systematisation

1 Fieldwork

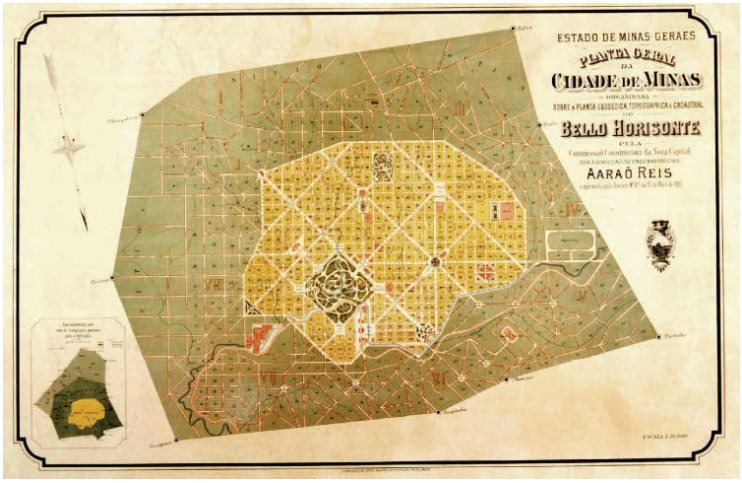
1.1 RMBH - Belo Horizonte's Metropolitan Area

The research objects are self-produced dwellings and their immediate surroundings located in metropolitan Belo Horizonte and its peripheral neighbourhoods. In this research, objects from consolidated settlements, small- and medium-sized subdivisions and popular and social collective housing projects were taken from Belo Horizonte and from two of its satellite towns.

The Greater BH *(Grande BH)* is a Brazilian urban agglomeration of five-million people. Besides Belo Horizonte, the area includes another 33 satellite towns. It is the third largest Brazilian megalopolis, seventh in Latin America, remarkable for its industrial parks and service offers. Like any large, heavily populated city in developing countries, Belo Horizonte experiences all the typical problems - from urban violence to traffic jams – but somehow produces a very dynamic cultural life. Located in the southeast region of the country, but not on the coast, Belo

Brazil in South America.
The location of Belo Horizonte is marked by the red spot.
Google Maps, 2017.

Horizonte is 440 kilometres from Rio de Janeiro and almost 600 kilometres from São Paulo.



Masterplan from *Cidade de Minas*, the former Belo Horizonte, 1895.
Arquivo Público da Cidade de Belo Horizonte, 2017.

Belo Horizonte today.
Wikipedia, 2017.

Belo Horizonte was planned and constructed in the 1890s to replace Ouro Preto as the capital of the state of Minas Gerais. The planning and construction team was headed by the Brazilian engineer Aarão Reis, who, like other engineers in charge, had a European formation on architecture, urban engineering, and sanitation. As planning models he had the work of Haussmann in Paris and of Pierre L'Enfant in Washington, D.C. "From the first, it [the plan] inherited wide and monumental boulevards, and from the second the orthogonal and symmetrical chessboard array" (Tonucci Filho, 2009, p. 3, my translation), which completely disregarded the local hilly topography, surrounded by mountains to the south. Originally, its *urban zone* was supposed to be restricted to the limits of a contour avenue, the *Avenida do Contorno*. For the *suburban zone* were reserved the areas outside the limits of the *Avenida do Contorno,* burdened by precarious infrastructure conditions and rapidly occupied by low-income and poor residents. Only three decades after its foundation, the city's limits on size and population already exceeded the planned frontiers (Tonucci Filho, 2009).

Today the city has more than ten times its original population and represents an area more than 35 times larger. As Lefebvre argues, "the violence of power is answered by the violence of subversion", since "state imposed normality makes permanent transgression inevitable" (Lefebvre, 2011, p. 23).

The dwellings chosen to be subjects for this research were all self-produced - some time before, at the same time, or in the near future from the fieldwork - as previously explained, without formal technicians, but by the initiative and resources from the dwellers themselves. The visited dwellings are all owned homes - single houses or dwellings that are part of informal gate communities and apartments, located in regular and irregular parts of the urban tissue.

Fieldwork Samples over RMBH. The dashed red line corresponds to 40Km. Google Maps, 2017, my edition.

1.2 Fieldwork spots

The choice of the fieldwork spots depended on the availability and capacity to get to the informants - self-producers whose socioeconomic profile would fit those typical of the Brazilian *battlers*, who mostly live in self-produced neighbourhoods. The choice of informants was not about a random search for poor neighbourhoods and their inhabitants. It was about looking for a social group that cultivates a specific *habitus*, reflected in their social practices and actions on space, which has less to do with money and more to do with non-economic capitals, symbols which attest to their belonging to this social group (Boudieu, 2007).

In this sense, the Quotidian Spaces Types (PDDI, 2011, p. 367), originally created in the context of the elaboration of the Comprehensive Masterplan of Belo Horizonte's Metropolitan Area *(PDDI-RMBH)*, was an interesting theoretical instrument that helped to identify or to confirm the possibilities to do the fieldwork in this or that urban space[1].

It is a conceptual framework, which categorises spaces according to types and so describes different situations of housing and urban environment, taking the level of autonomy of residents as a base of its formulation. The first criterion of differentiation is the degree of autonomy or heteronomy of the population on the most relevant decisions about the production of space. This aspect defines four large groups, and each group presents particular distinguishing aspects of itself. Of course, the limits among types are not fixed, since everyday social practices change all the time and have an impact on space (Kapp, 2012). The next table presents the original framework originally proposed in the masterplan.

> The spatial situations of each TYPE distinguish from another according to aspects as environmental conditions, urban articulation, urban infrastructure, verticalization, tenure regularisation, urban parameters, community cohesion, availability of public spaces, real estate pressure, etc. Some of these factors are present in all types, such as urban articulation (proximity or easy access to city centres). Other factors are relevant only to some types; for example, the urban

[1] "Quotidian Spaces Typology" (*Tipologia de Espaços Cotidianos*) is a study of types that was originally proposed as a basis for social programmes elaborated by the Research Group MOM (*Grupo de Pesquisas MOM)*, included in the Policy of Right to the Quotidian Space, part of the Comprehensive Masterplan of Belo Horizonte's Metropolitan Area. The original aim of this systematisation was to facilitate the diagnosis of urban conditions and to improve the cooperation among municipalities and groups of residents, since solutions, procedures or proposals for a particular place may be useful, or at least inspire other places of the same type.

parameters, which are fundamental to defined subdivisions, but not for collective housing (where the buildings are delivered ready) and for settlements (where formal legislation does not exist or comes later) (PDDI-RMBH, 2011, p.368 , my translation).

Quotidian spaces' Types RMBH

Collective Housing	**Subdivisions**	**Settlements**	**Rural Units**
... are situations in which the most relevant decisions about housing and its immediate environment are taken...			
... by a single initiative (urban planner, entrepreneur) in a given moment.	... partly by a single initiative in a given moment and partly by many residents over time.	... by many residents over time.	... by a single initiative over time.
Their main differentiation aspects are...			
... residents' income level.	... size of parcels (plots).	... consolidation status.	... the relation between work and housing.
This differentiation results in Subtypes:			
(1) Social	**(4) Small Subdivisions** (<360m2)	**(7) Vulnerable**	**(10) Familiar**
(2) Popular	**(5) Medium Subdivisions** (360-1000m2)	**(8) Consolidated**	**(11) Employer**
(3) High- and upper-middle income	**(6) Large Subdivisions** (>1000m2)	**(9) Historic**	**(12) Non-productive**

PDDI-RMBH, 2011, p. 368, my translation.

The resultant subtypes helped me to track possible fieldwork spots and informants. Thus, the first sampling of fieldwork spots of this research was found in *consolidated settlements*, in *medium-sized subdivisions* and in *social and popular collective housing*, as shown in the next table. Self-production, though, predominantly prevails in *settlements* and in *subdivisions* rather than in collective housing - mostly apartment buildings and row houses produced in the context of social housing projects, which are delivered to the families as ready products.

Collective housing units are normally less open to changes and additions because of their architecture typology and construction techniques. In most cases, enterprises are delivered as ready products and people are supposed just to move in. Despite of that, many dwellers intend to make changes to satisfy their needs, and some even have managed to change some internal configurations of their homes, as confirmed by Bayat (2004) describing situations of self-production in the Middle East.

> (...) add rooms, balconies and extra space in and on buildings. And even those who have formally been given housing in public projects built by the state, illegally redesign and rearrange their space to suit whole communities that emerge as a result of intense struggles and negotiations between the poor and the authorities and elites in their daily lives (Bayat, 2004, p. 91)

Although samples from apartment blocks and row houses may help us to evaluate to what extent those architectural typologies are able to restrain or to encourage people on space-changing, they were not included in the analytical part of this thesis as case studies because they are not typical self-production processes. Self-production can occur in collective housing, but as an afterthought, when people are already living there and feel the need of change, which may or may not happen. Their start is essentially heteronomous, governed by others, not by the dwellers themselves.

In this sense, from the amount of fieldwork samples, those located in *consolidated settlements* and *medium sized subdivisions* were selected to be the case studies of the research focus of the analytical part of the thesis. The demographic census of 1991 demonstrated a certain fall in the rates of urban growth in Brazil, in comparison to previous decades. However, this supposed deceleration did not happen in urban peripheries of large cities, which have continued to grow. Over the urban territory, informal *consolidated settlements* and peripheral *medium-sized subdivisions* are the places which experienced the most growth in territory and in population during the 80s and 90s (Tiwari, Rao & Day, 2016).

As presented in the next table, the fieldwork embraced 34 samples in total. From them, eight samples were located in consolidated settlements, 17 were located in small- and medium-sized subdivisions, and nine located in collective housing, in social and popular enterprises. As we can see in the table, from 34 fieldwork samples, 15 were taken as case studies to be closely analysed. Of those 15, six were located in consolidated settlements (*Vila Nossa Senhora de Fátima,* one of the clusters of the fieldwork,

and in *Vila Monte São José*, as a single case), and nine in medium-sized subdivisions (from three different parts of Belo Horizonte, Contagem and Nova Lima, two of Belo Horizonte's satellite towns).

Distribution of samples and case studies according to Quotidian Urban Types

Metropolitan Sub-types	Samples	Selected as Case Study
Consolidated Settlements	8	6
Medium-sized Subdivisions	17	9
Collective Housing (Social and Popular)	9	0
Total	**34**	**15**

I decided not to choose the samples from small-sized subdivisions to be part of the analysis, because they were less typical and representative than the ones from middle-sized subdivisions. The samples from collective housing enterprises were also left aside, because although their informants well represent Brazilian *battlers*, they are not the typical self-producers. Most of their self-production activities were restricted to planning for the future, without a concrete preview. Although all residents of popular enterprises and social housing wished to change the internal divisions of their apartments and houses, only three informants had already initiated some kind of building process. The table on the next page presents a complete overview of the samples. In the table we can observe:

- urban types and neighbourhoods where each sample is located;
- how each sample was contacted;
- which informants have recommended others (a result of the *Snow-ball Sampling* - see page 36) and which informants I found myself;
- I refer to each sample and later to each case study using a pseudonym for the main informants in order to preserve their identities. The main informant was the person with whom I established the contact and who received me at home for the interview;
- the yellow lines are the15 case studies selected from the 34 samples, and red limits indicate clusters.

Sampling Overview, according to Quotidian Urban Sub-Type, Neighbourhood, Name of Informant, Contact and Status of building process.

Quotidian Sub-type	Neighbourhood, Location	Name of the informant / sample/case study	Contacted through	Status of the building process
Consolidated Settlements	*Vila Nossa Senhora de Fátima, Belo Horizonte*	**Flavia ***	Silva	Ongoing
		Cintia	Flavia	Ongoing
		Levy	Flavia	Ongoing
		Louis	Flavia	Ongoing
		Nely	Flavia	Interrupted briefly
	Vila Monte São José, Belo Horizonte	**Carlota**	Ricardo	Interrupted, wishing to go on
	Vila Pendura Saia, Belo Horizonte	**André**	Ricardo	Ongoing
	Vila das Antenas, Belo Horizonte	**Tadeu**	myself	Interrupted, wishing to go on
Medium-sized Subdivisions (12-14x30m)	*São Joaquim, Contagem*	**Oliver**	myself	Ongoing
		Eduardo	Oliver	Ongoing
		Renata	Oliver	Ongoing
		João (2)	Oliver	Ongoing / Ready
	Jardim Canadá, Nova Lima	**Hugo**	Ricardo	Interrupted
		Carlos	Hugo	Interrupted
		Rosa	Hugo	Interrupted, wishing to go on
	Pindorama, Belo Horizonte	**Nivea**	Mara	Ongoing
		Mara	Ricardo	Interrupted, wishing to go on
	Nazaré, Belo Horizonte	**Luiza**	Ricardo	Ready
	Patrocínio, Belo Horizonte	**Rodrigo**	myself	Ready
	Darcy Vargas, Contagem	**Manoel ***	Santos	Ready
		Lucy	Manoel	Ready
		Rodolfo	Manoel	Ongoing
Small-sized Subdivisions (10x20m)	*Sapucaias III, Contagem*	**Rebeca**	myself	Ready
		Rafael	Rebeca	Interrupted, wishing to go on
		Katarina (2)	Inácio	Ongoing / Ongoing
Social Collective Housing	*Granja de Freitas, Belo Horizonte*	**Juliana**	Inácio	Ready
		Marcelo	Mariana	Ready
		Carolina	Inácio	Ready
		Mariana	Inácio	Ready
Popular Collective Housing	*Estrela Dalva, Belo Horizonte*	**Gilberto**	myself	Ready
	Cabral, Contagem	**Vera**	Eduardo	Ready
		William	myself	Ready

Total: 32 informants and 34 fieldwork self-produced fieldwork spots. Flavia* and Manuel* were informants from pilot interviews.

As we can see in the previous table, besides the two informants from the two pilot interviews, I interviewed another 30 self-producers from over 14 different neighbourhoods of Belo Horizonte and some of its satellite towns. As two of them had self-produced their own business besides their own homes, I had a total of 34 samples.

1.3 Contacting Informants for Pilot Interviews

I found some field work spots by myself, given my earlier activities as a researcher and architect working with low-income neighbourhoods in metropolitan Belo Horizonte. Other spots were found through the support of other researchers who were engaged in the subject of self-building, informal settlements and micro-credit for housing. By using the snowball strategy, the work was legitimated by recommendations, making it easier to enlist more participants. I also knew some other potential informants personally from different contexts.

Through the Brazilian professor and researcher Margareth Silva, an expert on the environmental conditions of *Vila N. S. Fátima*, I was introduced to Flavia, a young pedagogue who has lived there all her life. *Vila N. S. Fátima* is part of one of the largest informal urban settlements of Belo Horizonte, located in the central-south region of the city. Flavia, her mother and sister have self-produced their home for more than 24 years. Flavia is very well known in the neighbourhood and, in contrast to the other informants, she is very much engaged in the struggles of the local community. I did the first pilot interview with Flavia and her sister, which led me to find another four informants in her neighbourhood (Cintia, Nely, Levy and Louis), whom I interviewed in the second and definitive stage of the field work.

The second informant, with whom I did the second pilot interview, was introduced by professor Roberto Santos, who has worked with informal settlements in the context of the *Escritório de Integração*[2] *from the Pontifical Universidade Católica de Minas Gerais (PUC-MG),* where I have also worked as assistant professor. At the *Escritório de Integração,* Santos had the opportunity to work with some students whose families would perfectly fit in the profile I was looking for. Because of this relationship, I met Manoel, the father of one of our students. He was a middle-aged man who has worked for more than 30 years as bricklayer and master builder. He has planned the family house alone and has built many parts of it

[2] More about *Escritório de Integração* at
https://eiescritoriodeintegracao.wordpress.com/sobre/

himself, almost without any help from others. The family live in Darcy Vargas, a relatively recent middle-sized subdivision, home to a large, low-middle income population. This neighbourhood is part of Contagem, the most important satellite town of Belo Horizonte. Manuel took me to his neighbours, Lucy and Rodolfo, two self-producers whom I interviewed in the definitive part of the field work.

1.4 Pilot Interviews

One of my main preoccupations during this work was to find the right informants, since the fieldwork is one of the main fundaments of the research. I therefore decided to start the fieldwork with pilot interviews. These pilot interviews were used to test if my research approach would work out before taking the risk of going deep into the fieldwork, without achieving the expected results. They would also establish whether the first informants really reflected typical *battler* socioeconomic aspects and if they actually were self-producers. Besides, I had to confirm whether within their socio-spatial environment I could find other informants to take part in the research. The pilot interviews took place in March 2013.

Fortunately, the pilot interviews were very positive. The most important confirmation obtained from them was the possibility of getting more informants through the primary contacts. In this first conversation, I told them that the idea was to gather their neighbours in order to evaluate the impacts of their construction processes on one another. Both informants were very much open to that idea and immediately started to think aloud about possible informants, and then gave me their contacts. Of course, those two cases do not represent the rest of informants I interviewed, just as the complete set of informants does not represent all the *battlers* from Brazil. Nevertheless, I found the two first very typical, mostly regarding general aspects of their neighbourhood, their most common everyday social practices, the way they described their building processes, including their relations with other neighbours and with the urban space, and my own observations on their dwellings and building sites. These interviews convinced me that I could find other informants by following the same path.

About the methodologies of the interviews and my ability to conduct them, I had to be mindful of three things. The first was how to present myself, since I am an architect and architects are popularly regarded as elitist professionals who design mansions and big architectonic icons. This impression would be unfavourable for the success of the interviews, since the focus group of the research are popular dwellers who had built their houses almost alone. They could be embarrassed to openly present their homes - and their lives - to someone who would judge their work, using a different set of

tools and an opposite vision of what a real house is. As explained in Part II of this thesis, architects and popular dwellers have different *habitus*. This basically means that they come from very different social environments and, because of that, cultivate different values, have different criteria to make decisions, and use different tools for reaching their goals.

However, to describe myself as a researcher seemed to be more positive and lighter than presenting myself only as an architect. The definition or the understanding of a researcher is quite broad, a bit abstract and not so immediate. So, I decided to present myself as "a researcher who investigates the dwellings that people build themselves, without the help of engineers or architects". Having said that, I realised at once that this expression defined my true occupation at that moment, without immediately informing the others that I was an architect. Some informants asked me which was my real work: "but what do you do then?" ("*mas então o que é que você faz?*"). In this case, of course, I openly admitted that I was an architect, but that at that moment I was only doing research. Curiously, I could recognise a feeling of relief in their faces, the same relief I was able to identify in my early experience with the *Arquitetos da Família*, a reflection of the fear of dealing with such a complicated and expensive professional as an architect can be (Nogueira, 2010).

> One can feel on clients' faces the relief they visibly demonstrated when the work was set out and, especially, when they heard about the costs of the services. This population, used to informal practices, does not feel secure by employing a professional whose work is not well known. They prefer a near correspondent, a master builder or an experienced bricklayer. (Nogueira, 2010, p. 165-166, my translation).

The second thing I had to be mindful of was to contain a certain eagerness to make comments and provide spatial solutions, since as an architect I was trained to do exactly that for a long time. Only one informant asked for some architectonic advice, at the end stage of the field work. On this occasion, I found a way to change the subject and to talk less, in order to keep the coherency and the integrity to the purpose of the research. In this case, the *strategies to listen* (Livingston, 2006) were very much useful to keep the attention completely turned to the speakers and to avoid making unnecessary comments, which could influence informants in their answers.

The third issue had to do with the sequence of events in each meeting, since interviews or conversations were only one of the events. Although they were always audio recorded, which keeps all oral information intact, there would also have to be space and time for my visual observations regarding the internal and external spatial organisation, the building techniques used, and the existent condition of building materials and construction elements. Additionally, I still had to make sketches of important technical details of the dwellings or of the local environment, to take notes, to record videos and to take useful photos. As I learnt from Livingston (2006) , each one of these steps is particularly important and should happen with sufficient time and motivation. This means that the conversations should not take so long that informants get bored or tired, or simply need to leave for another appointment.

Each meeting was an opportunity to learn and improve for the next. I listened to each interview after concluding them and made my observations on how to proceed in the next ones to avoid repeating mistakes. The main strategy for the success of the meetings was to demonstrate a true interest in the topics the people were concerned about. At the same time, it was essential to let people speak freely while taking care to gently steer them back to the topic, if necessary, and to avoid personal comments - most of all, judgements.

Moreover, the pilot interviews helped me to adjust the interview methods I was using, and they offered an abundance of fruitful information on self-production and social inequality. This confirmed to me that the fieldwork really could work out as the main source of information and knowledge on the topic, and would be fundamental for the research.

1.5 Contacting Informants for the Definitive Fieldwork

After the conclusion of the pilot interviews and the adjustment of the interviews' techniques, the definitive part of the fieldwork began from August to November 2013. From among 30 informants, six (Andre, Carlota, Hugo, Mara, Luiza and Rodrigo) were able to be contacted because of their prior participation as informants in a research study conducted in 2008 by the architect Eneida Ricardo about the *Construcard*, the version of micro credit offered by the Federal Savings Bank *(Caixa Econômica Federal)* to borrowers to buy building materials[3]. I confirmed that many dwellers, who had required that

[3] About *Construcard*, see Part II, page 86.

type of credit, presented a typical *battler* socioeconomic profile. As Ricardo had kept their telephone numbers, it was relatively easy to locate them. Most of them were settled in consolidated settlements and in middle-sized subdivisions from Belo Horizonte and Nova Lima, another satellite of the Belo Horizonte's metropolitan area. Those informants in turn connected me to another three self-producers, all of them neighbours (Carlos, Rosa and Nivea).

Another five primary informants (Carolina, Marcelo, Mariana, Katarina and Juliana) were contacted through the Social Work Reference Centre from the district of *Granja de Freitas* in Belo Horizonte *(CRAS Granja de Freitas - Centro de Referência de Assistência Social do Granja de Freitas*), with the help of Solange Inácio, the local coordinator of the institution. Because of her daily work, she knows almost each family that lives in the *Granja de Freitas* and recommended to me those she believed would fit the profile I was looking for. The primary informant, Mariana, took me to another informant, Marcelo.

Granja de Freitas is a low-income neighbourhood that is divided into three parts. They are the result of three government mass housing projects, which originated then- different urban types in the area - high-rise apartment buildings and two- or single-storey row houses. Although most of the internal spaces and façades cannot be changed by dwellers because of the way the buildings were constructed, I still had to check if residents wanted or needed changes, or even if they had tried to make changes through self-production processes. A secondary intention was to find out how and what kinds of renovations they had done in their homes, given the rigid construction system of their dwellings.

The rest of the field work spots were found by me, through old contacts from earlier work and ongoing research at *Grupo MOM*, a research group with which I still keep close contact. I enlisted another four primary informants (Oliver, Rebeca, Tadeu and William), who drove me to another five (Eduardo, João, Renata and Rafael). Eduardo later introduced me Vera, another informant.

1.6 Definitive Fieldwork

Independently of any particular interview technique, my previous experiences with fieldwork at *favelas* and at peripheral neighbourhoods showed a high level of spontaneity from the local residents, which is invaluable to the researcher in conducting the conversation to obtain the necessary information. Generally, I found that people were not shy and easily started telling stories about how they came to the neighbourhood or about the renovations they were currently doing, which are interesting topics to

initiate contact and break the ice with the informants. Thus, their openness,was already a great advantage. I decided to consciously make use of it, maintaining a certain degree of informality when talking to people. This audience is not used to formalities in their everyday lives. Keeping the approach informal and simple was necessary to make a real contact with them and to absorb the atmosphere of their homes. Informal manners helped me to take part in the conversation as an acquaintance, showing curiosity and interest, instead of positioning myself as a distant scholar[4].

With both experienced or new informants, the idea was to start with an initial general question - usually "how did you come to live in this neighbourhood"? - and to let people freely speak as much as possible. As in any unstructured interview, conversation topics did not follow a sequence and I did not have a list of questions, but a private check-list of desired topics I would like to know about. The check-list was used to control the access to the information, since there was no sequence of topics along the conversation. As interviewer I had to check if this or that topic had already been commented. Interruptions were maximum avoided, as well as some kind of pressure on giving answers. In some situations I noticed that some people did not feel comfortable on telling about their private lives, mainly regarding income or some other aspect involving family relationships. In such cases, I just changed the topic and moved on.

Check list on field

Acquisitions	Dreams and new targets	Cultural / Educational capitals
Collaboration - family members	Duration	Cultural Industry
Current aspects of the house	Pause in the process	Demand for Housing
Decisions	Personal preferences	Economic Growth
New ideas and demands	Regrets and mistakes	Educational System
Fears	Relation with the city	Government Policies
Conflicts	Relation with the neighbourhood	*Habitus*
Old desires, demands	Socio-economic environment	Historic origins
How to build	Spatial defects	Informality
Manpower's conditions	Technical defects	Regulations
Learnings	Working conditions	Taste
History	Architects` rule	Working relationships
Educational background	General aspects on social inequality	

[4] I hope this research can be accessible to non-academic readers. I believe that science is a great instrument to socially empower communities and therefore should be available for all. Therefore, my idea is to maintain a simple language, making it easy for lay readers. The Portuguese version of this thesis is planned.

The fieldwork was very profitable and even exceeded my expectations. There were certain aspects which strongly influenced this positive result. The first one is the style of the initial approach - how the interviews started. In this case, the manner of approaching informants played an important role, since the initial approach can either motivate people or inhibit them from speaking. The second has to do with the expedient use of interview techniques in order to glean the necessary amount of fruitful information. Unstructured interviews also demand technique, and adequate techniques very much help the researcher in conducting the interviews. Moreover, it was possible to set three clusters of dwellings, which allowed the study of the dwellings in their territorial context through their relationship with their immediate surroundings. This should be understood not only physically, regarding the changes in the material space which constitute dwellings and their building processes, but also in the sense of Lefebvre (2011), on the social practices and social relations which cross physical limits.

Of course, some interviews were more successful than others. Each person is unique, some more reserved, others more open, people have good and bad days, which was totally respected. Despite the relative heterogeneity of the informants, I made a great effort to maintain the same style of interview throughout.

As explained in the Part I - Methodology, notepads were abandoned, which allowed me to keep my attention completely focused on the speakers without any distraction. After concluding the conversations, which usually took about one hour, I started to take pictures and to shoot videos, with the authorisation of the residents, of course. After leaving the dwelling, I prepared some drawings and took notes to keep important details in mind. As I did not take any notes during the conversations, the audio files assured that all the information was there to be accessed at any time.

The limitation of samplings took place as characteristics started to repeat. On the one hand, this phenomenon demonstrated that the research objects were the correct ones and that they really belonged together as a focus group. On the other, this repetition demonstrated that new samples were no longer necessary and, most importantly, that there was sufficient material to be analysed and discussed.

2 Case studies

As explained previously, 15 samples were chosen to be analysed as case studies for the research. The remainder of the samples are also present within the analysis, but only in general terms. Therefore, for purposes of this paper, only the 15 case studies will be represented, primarily through their neighbourhoods (2.1), in order to present a wider overview of each urban situation. Secondly, the socioeconomic background of the informants will be discussed (2.2), and finally, their first steps as self-producers (2.3) will be explained.

2.1 Neighbourhoods

> (...) although basic urban infrastructure conditions like paving, public sanitation and illumination have improved in *favelas* and distant neighbourhoods, the urban environment's quality is questionable. The private sphere has become better, but public places are still spatially poor, with high constructive densities, few green areas, and restricted collective everyday life. Lower middle- class neighbourhoods look like storage spaces for manpower (...) (Nogueira, 2015, p. 45).

As described above, Brazilian metropolitan outskirts reflect the type of capitalism that dominates the global South, wherein the workers are relegated to the peripheries and the cars dominate not only the real world, but also the imaginations of almost everyone. Already in the 20s, Kracauer (1930) observed that the German cities of that time reflected the social practices of the German white-collar workers: "The big German cities today are not industrial cities, but cities of salaried employees and civil servants (Kracauer, 1930, p.32)".

Battler neighbourhoods are the territory of self-production, where urban parameters play a less important role than local negotiations among neighbours. At the same time, façades are only a result of internal changes and express less symbolic power. In general, self-producers have done extraordinary work providing for their own needs. Similar to Bredenoord's description of Lima, Peru (2016, p. 3), Brazilian "households have shown to be able to incrementally build up to 3 - 4 storeys (...) on plots of 90 square meters".

The following section will present each neighbourhood with their respective residents.

Consolidated Settlements - *Vilas* and *Favelas*

An urban settlement is an economically depressed area within a city, commonly known by the pejorative term *slum,* or the Brazilian variation *favela*. Parcels and streets are organic because were spontaneously shaped over decades. Normally they have an irregular land tenure situation, since they occupy useless land. Plots are traded outside the formal real estate market, and it is here that self-production and self-building prevail.

These settlements are considered **consolidated** when they achieve a certain degree of stability regarding land and social recognition. Many settlements arose on geologically and topographically challenging lands, which have been occupied over time by a precarious working class and by the poorest citizens, who have self-produced and self-built, not only their dwellings, but most of the local infrastructure. The combination of residential and non-residential uses is very common. Constructions are diverse, including detached family houses, informal condominiums, three storey-apartment buildings, small shops, and local services. Normally the land tenure remains irregular and there are very few public spaces, although streets and corners often serve as meeting points.

The rise of *favelas* in Belo Horizonte took place more or less as in any other capitalistic city. Since its construction, between 1898 to 1900, the residents who could not access the formal land market started to settle on the city's initial fringes, available parts of the territory in which the formal state market had no interest. These places have met, to some extent,

> their daily needs for shelter, access to water, the labour market, transportation, and other urban benefits. (...) The first *favelas* rose together with the new capital, mainly to shelter the workforce who would build it, which, even intrinsic to its production process, had no space to settle, not having been foreseen in the plan of the engineer Aarão Reis. In fact, it was a role of the State, which was never fulfilled, neither at the time of the construction of the city, nor later. (...) Since then, *favelas* have always been part of the city, and although they occupy little more than 5% of the city's territory, they house approximately 22% of the population (...) (Silva, 2013, p. 88-89, my translation).

The case of Belo Horizonte is especially interesting because it was a planned city, but with no plan to receive the workers who built it.

> The new capital was designed for the power that would be exercised in it and thus, the [formal] lots were distributed to segments of the population directly linked to the state apparatus and the landowners from Ouro Preto [the old estate's capital], as a way to stimulate the elite from Ouro Preto, still reluctant to this transfer (Mendonça et al., 2008, p.11, my translation).

The implementation process of the new capital took place until approximately 1930. Regarding the working classes' shelters, the role of the estate was only to control the settlements in a provisory matter, so as to maintain them close to the places in need of a workforce in order to complete the consolidation of the urban zone of the city (Silva, 2013). This small part of the history of Belo Horizonte confirms how social inequality leaves its footprints on the urban environment. Likewise we have the distribution of land among Ouro Preto's elite members and the episode of the Brazilian Captaincies about three-and-a-half centuries before, where members of the emerging Portuguese elites were benefited with large portions of land, given by the Portuguese crown. By 2004, Belo Horizonte presented 226 *vilas*, *favelas* and social housing projects which sheltered almost five-hundred-thousand people (Guia Cultural de Vilas e Favelas de Belo Horizonte, 2004, *apud* Tonucci Filho & Ávila, 2008).

The following pages present a short contextualisation about two of the Consolidated Settlements where the fieldwork took place - **Vila Nossa Senhora de Fátima** and **Vila Monte São José**, both located in Belo Horizonte. In those places, five households and one apartment building (built for rental by one of the residents) were visited.

Vila Nossa Senhora de Fátima

Settled on the slopes of *Serra do Curral*, in the extreme south of the city, *Vila Nossa Senhora de Fátima* is one of the six *vilas* which are part of the biggest urban settlement of Belo Horizonte and of the state of Minas Gerais – *Aglomerado da Serra*[5]. It represents an area of 1.495 km^2 and a population of about 40,000 people. This number is uncertain, as it can vary to more than 100,000 inhabitants, according to

[5] The Belo Horizonte's municipality only recognizes six *vilas*. Local people, researchers and other institutions recognize another five *vilas* as part of the *Aglomerado*.

multiple press sources. It is estimated that about 80% of its territory originally belonged to the state and 20% to private owners.

Vila Nossa Senhora de Fátima was first established in the 60s. Many of its inhabitants were migrants from the poorer areas of Minas Gerais, predominantly from the north and northeast. In the beginning of the occupation, the area was simply a track for animals, which were used to transport supplies up the hill. It was only about 30 years ago that the first streets were open and paved and the electrical energy supply arrived, although many connections were (and still are) made through clandestine use of power lines. Around 1975, the first settlers arrived in the so-called *Primeira Água,* close to the dividing line with the *Segunda Água* and the other *vilas,* Marçola and Fazendinha. During the 80s another area began to be occupied, close to the *Parque das Mangabeiras* (Prefecture Municipal de Belo Horizonte, 2007). In the last 12 years, the *vila* has suffered consecutive infrastructure interventions as part of *Vila Viva*, an urbanisation project, the aim of which is to improve the urban space of some of Belo Horizonte's *vilas* and *favelas*.

The location of the neighbourhood is one of the major benefits of *Vila Nossa Senhora de Fátima*, and is very much appreciated by its inhabitants. It is located 4 km from the city centre and even closer to *Savassi*, the most prestigious area of Belo Horizonte, known for its vibrant nightlife, shopping, and leisure options.

Top-view Vila N. S. Fátima. Google Earth, 2017.

> It is very well connected and also very well provided with services and commerce. Everything we need is nearby. (Flavia, Vila N. S. Fátima)

Vila Viva is an improvement programme of the City of Belo Horizonte geared to *vilas* and *favelas* which have passed through a PGE - Global Specific Plan (*Plano Global Específico*). A PGE is an instrument of planning and tenure regularisation for informal settlements that defines which urban interventions will take place in each area. *Aglomerado da Serra* was the first settlement in Belo Horizonte to experience such interventions, which started in 2005 with the *Vila Viva* programme (Silva, 2013). Part of the programme for *Vila Nossa Senhora de Fátima* was the construction of 568 housing units (Prefeitura Municipal de Belo Horizonte, [no date]) to be transferred to local dwellers whose dwellings were in a precarious state, or residents who had to leave their dwellings to cede space for the construction of new streets, a sports facility, and a wide new avenue, also part of the plan. Although some people were compensated with a new apartment, many of them did not wish to leave their homes. Others could not adapt to the new situation, either. Their relationship with their space is different from the lifestyle typical of condominium residents. The dwelling next door is too close, there is no garden, and everybody has to pay for their own electricity and water, something that had always been informally arranged.

The most impressive and aggressive intervention of the programme was the construction of a large and fast transit avenue, *Avenida do Cardoso,* whose proportion is oversized in comparison with the local urban tissue. It has split *Aglomerado da Serra* in order to divert traffic to outside the city centre. For that project, many dwellings were demolished and families had to move either to the apartment blocks built by the state or to distant neighbourhoods, where they had to buy a plot or a dwelling with the compensation money, which, by the way, is in reality much less than the amount of resources people have invested in their former dwellings. It is also unfair because the municipality only pays for the house and not for the plot. This intervention has been highly criticised by experts in urbanisation of *favelas,* by city planners who work in the place, and by the local residents because of its authoritarian and unequal character. Among many other problems, this action also ignored local environmental conditions and the dependence of the local residents to their community and to that space, which is highly positive and contributes to a certain local equilibrium of competing forces. Another negative result of that intervention was an increase in the prices of land and dwellings in the area, which in turn increased the competitiveness for land and shelter, already predicted by Davis some time earlier (2006,

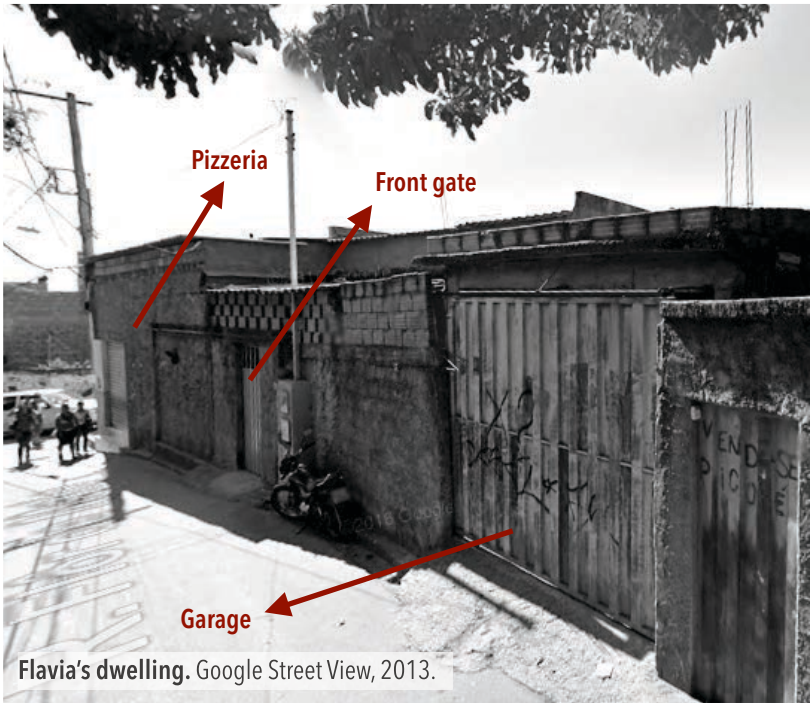
p. 81): "…with the upgrading, the real estate submarket consolidates in the favela. Both land and houses become consumption goods and the price soars".

In *Vila Nossa Senhora de Fátima*, I was able to work with a cluster of five dwellings. As previously mentioned, the contact initiated with Flavia and through her I could contact and work with the informants Cintia, Nely, Levy, and Louis. All of them live on one of the main streets of the *vila.* Four of these informants did not actively participate in the manual work on the building site, but they all managed the building process, which lasted at least until 2014. They imagined the internal division of the spaces, chose designated building materials, contracted and coordinated the manpower, and paid all the costs. Only one of them performed a great part of the building work himself, albeit with the guidance of a master builder.

Zoom Cluster Vila N. S. Fátima.
1 - Flavia; 2 - Cintia; 3 - Nely; 4 - Levy; 5 - Louis**.** Google Earth, 2017, researcher's edition.

Cluster Vila N. S. Fátima with open spaces and green areas.
Author's elaboration, 2013.

Flavia is a 40-year-old Brazilian pedagogue. She has lives with one sister, her mother, her two children and one nephew in a big self-produced house. The three women are the supporting structure of the family. Building of the house began in the 70s and it has remained under construction since, because "there is always something to be done", as Flavia says. It has five bedrooms, a living and dining room, kitchen, bathroom, balcony and office. A garage and hen house are outside the main building, within the same plot. A small flat for rent was arranged in the underground, using the inclination of the terrain, and a small pizzeria was built on a small piece of land beside the house. The pizzeria belongs to the eldest sister, who lives in another place.



Flavia's dwelling. Google Street View, 2013.

This family never thought about living somewhere else or living in an apartment block provided by the municipality in the same area as part of the Vila Viva programme. According to Flavia and her elder sister, their mother would never be happy living without a backyard with earth, because she raises chickens, ducks and geese. Flavia's sister loves to listen to loud music and thinks that it would bother the neighbours if they lived in an apartment. As old residents, their relationship with other neighbours is quite solid, based on mutual help and sincere respect that has been built over decades.

Most *favela* residents can only afford formal lots if they are located in very distant neighbourhoods. Normally they are not well connected with the city centre and might even present poor infrastructure conditions. To move to a distant neighbourhood means to worsen their lifestyle - to spend hours in traffic to go to work and to access worse public schools.

After the small pedestrian way beside Flavia's place, we find **Cintia**. She has lived with her parents at *Vila Nossa Senhora de Fátima* since 1975. She is responsible for running the family business, a grocery

shop and snack bar, where every day many men stop for a small drink on their way home after a long day of work "down there".

Cintia's condominium.
Google Street View, 2013.

Similar to Flavia, Cintia is the main person of the household in terms of decision making and taking care of the building site. This case study is a small condominium, because it includes five housing units, besides the bar which opens to the street. The family occupies one dwelling and the rest will be rented. The family does not intend to leave the neighbourhood, unless they could afford a dream apartment in the city. They were quite critical of *Vila Viva*'s apartment blocks. They believe that they will soon be very spoiled because of bad construction. Cintia's father is especially critical regarding the size of the new apartments.

> the apartment these people are building is much smaller than this one (Cintia's father, Vila N. S. Fátima).

He is proud of building better quality housing units than the government. To move into the apartments was never a good option for them, although an apartment seems to be safer. As they own some small land in the countryside, they intend to spend more time there and worry less about their security.

Despite the poor quality of the new housing units provided by the *Vila Viva* programme, Cintia appreciates the rest of the infrastructure interventions. According to her, public transit has become better. Her father agrees that it is nicer now, but thinks the interventions were too expensive.

Juxtaposed to Cintia's is the house of **Louis**. He has been living with his mother since he was born in the early 80s in an underground dwelling. At the time of the fieldwork he was unemployed and then decided to invest his time building himself an addition behind the main dwelling, with the guidance of a friend who works as a master builder. Besides the addition, the idea was to build another floor on top.

The family owns and rents out the garage and the snack-bar on the ground floor, both open to the street. They have never had problems with the neighbours and Louis does not intend to leave the place. His mother, on the contrary, would like to move to an apartment in the city. Louis would like to stay in the neighbourhood, but to move to "a lower part":

> (...) people would look at us differently if we lived down in the city (Louis, Vila N. S. Fátima).[6]

On the other side of the street, we find the dwellings of Nely and Levy, separated by a narrow pedestrian way. **Nely** works as a cleaner and has lived at Vila Nossa Senhora de Fátima since the end of the 90s. She lives together with her husband, two daughters, one niece, two brothers, and two cats. She is the responsible person in the family to imagine the division of the spaces and to coordinate the building process. Her husband has built some parts of the building, always with the help of a bricklayer who guides him. This hard-working couple knows what they want and need to maintain the family unit and to live together in this big house.

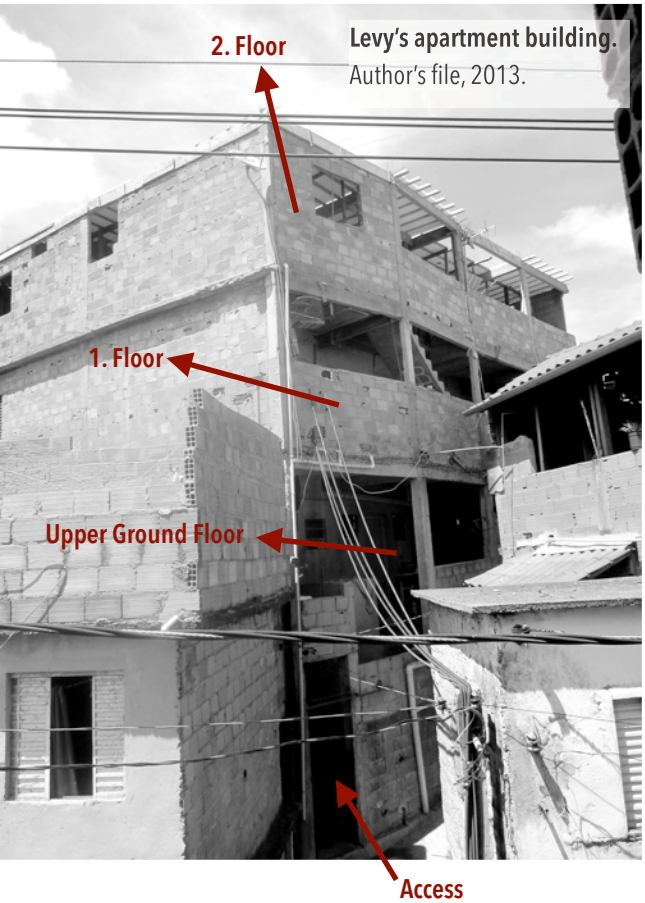
Louis' place front façade. Google Street View, 2013.

Collage of Nely's place. Author's elaboration from Google Street View, 2013.

Nely's husband very much appreciates residing at Vila N. S. Fátima. However, if he had the economic wherewithal to maintain the family in the countryside, he would like to come back to his hometown, in the northeast of *Minas Gerais*. This would be his only reason to leave the neighbourhood. Conversely,

[6] He names "down" as the lower part of the *vila* or as the formal city in general.

Nely would like to sell the house and to move to the "city". This family is also critical of the infrastructure interventions from *Vila Viva*. In their opinion, the reason for relocations and demolitions was not the geological risk, as the municipality claims. According to them, many families had to leave good houses behind because they were "convinced" by the municipality to do so. As they did not have formal ownership, they had to leave and make way for the new square and Cardoso Avenue. Although critical regarding the real reasons of the program and the way the work was conducted, they appreciate the final result, because the public bus could stop closer to their home. Before the intervention, the streets were too narrow and the bus could not reach their area. They had to walk from the bus stop up on the hill to arrive home, which is extremely exhausting.



Levy's apartment building.
Author's file, 2013.

Levy has lived since a very young age with his sister Nely at Aglomerado da Serra. As a young successful entrepreneur, he owns a mattress and furniture shop in the same neighbourhood, and also invests in the local real estate market. In 2009, he started building a three-storey apartment building with 12 rental flats on the land behind his sister's place. He is studying civil engineering in an evening course at a private school. Levy believes that the price for his flats (the rental price and the selling price) will increase, given the opening of the new avenue. He claims that the new avenue and the new square have changed the image of the place. In his opinion, the square gives the place a more open and lighter atmosphere. Levy is completely involved with the real estate market in the area - maybe more than he thinks he is. As Davis observed, "housing the poor was a good business" (Davis, 2006, p. 87). In any case, Levy appreciates living in the neighbourhood, although wishes to own an apartment in the formal city.

> After 20 years [living at Vila N. S. Fátima], there is no way of not enjoying it (Levy, Vila N. S. Fátima).

VILA MONTE SÃO JOSÉ

Also located in the south part of Belo Horizonte and surrounded by upper-middle- income neighbourhoods, *Vila Monte São José* is the remaining part of the former community of *Morro do Querosene*. The urban settlement was first established in the 1940s as a result of sequential removal of families from *Favela da Barroca*, the first *favela* of Belo Horizonte, which has existed since the beginning of the twentieth century, approximately 1902 (Filgueiras, 2009).

> According to the technical report containing the history of this occupation (URBEL,1994), the first residents occupied large plots, today arranged as a small gated community. It is interesting to note that the greatest difficulties encountered by the municipality in the regularisation process of the *vila* are related to these "family condominiums", since a large number of the first occupants have died and their heirs are not in agreement with the ownership. (Filgueiras, 2009, p.72, my translation).

Zoom location Carlota's place. Google Earth, 2017.

Top-view Vila Monte São José. Google Earth, 2017.

For 30 years *Morro do Querosene* grew without any kind of urban infrastructure. There was no piped water, sewage pipes, public lights, electricity, pavement or waste collection, in spite of its rich cultural life, community identity, and union. From 1970 to 1999, many families living at *Morro do Querosene* also began to be relocated, because of the opening of new roads to serve an upper-middle-class neighbourhood which was growing up close by, and because of a supposed geologic risk to some existing dwellings. Today, the remaining part of the place, known as *Vila Monte São José,* represents about 70% less of its initial territory and inhabitants (Filgueiras, 2009). In 2000, its population was fewer than 900 inhabitants distributed among about 200 households. The population is notably formed by migrants from poor areas from the north of Minas Gerais and from the northeast of the country, similarly to Aglomerado da Serra. These individuals end up accessing only the least qualified jobs, working as bricklayers, painters, doormen, housemaids, cleaners, and drivers, primarily working as home-help for the upper-middle class who live in the surroundings. (Filgueiras, 2009).

Carlota's place entrance. Google Street view, 2013.

The young lady **Carlota** has lived there since 2002, together with her husband, two daughters, and her mother. She works as a baby sitter and her husband as a doorman. Both come from the rural area of the north part of Minas Gerais. They moved to the capital looking for better living conditions. They live on one part of an informal plot in a kind of small condominium. Another informal plot belongs to Carlota's brother-in-law, who invited them years before to join him in the big city.

Medium-sized Subdivisions - Peripheral neighbourhoods

As the name indicates, subdivisions are urban spaces divided into geometrically homogeneous parcels and streets. They are created by private investors, regularised by the government, and occupied by diverse social groups, with multiple uses and architectural typologies. Low- and low-middle income groups are the majority in the subdivisions located along the city's outskirts. Normally the land is regular, but very often buildings are not approved because self-production prevails. There are few public spaces, besides streets, and the real estate market tends to encourage the building of apartment towers, increasing the problem of urban density. Such subdivisions are strongly driven by private interests, which aim to profit with the valorisation of the land while contributing to the existence of a high quota of empty plots. In Belo Horizonte and its metropolitan area, most middle-sized subdivisions are comprised of 12m x 30m plots, a kind of standard measure, which repeats in many of its satellite towns.

Top-view São Joaquim, Google Earth, 2017.

São Joaquim

São Joaquim is a peripheral neighbourhood from the Northeast side of Contagem, the main and biggest satellite city from the metropolitan area of Belo Horizonte. With a population of 600,000, Contagem is a typical industrial city.

Cluster São Joaquim, with open spaces and green areas. Google Earth, 2017.

Zoom Cluster São Joaquim.
1 - Oliver; 2 - Renata; 3 - João (flats); 4 - Eduardo; 5 - João (house)
Researcher's elaboration, 2013.

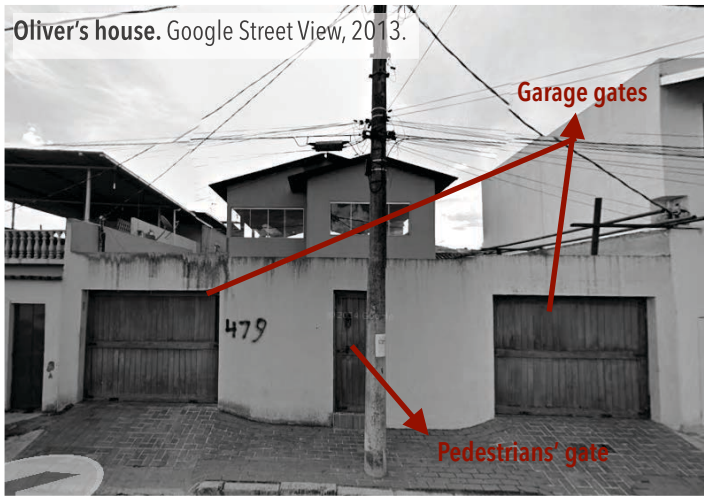
There is almost no information about the district of São Joaquim. It is one of the many anonymous peripheral neighbourhoods of big cities, as anonymous as its population (Le Ven, Pereira & Pinto, 1972). *Contagem* (in English, count) has this name because during the colonial period the city was a registration and taxation post, installed at the former *Sítio das Abóboras* in the beginning of the seventeenth century. Travellers had to interrupt their journey and took the opportunity to rest, to take care of the animals, and to do business. Since early times, the place served as a reference for passing the night, providing shelter and food. What is today the district of São Joaquim was previously the so-called *Fazenda Confisco*. The old farm was part of the complex system of tax collection of the Portuguese government. It was large and very well- equipped, where cattle, and sometimes even slaves, were kept from their owners who had not presented the proper documentation to prove their acquisition (Descubra Minas, 2017).

São Joaquim is another typical peripheral neighbourhood, which began with detached single small houses, possibly built to meet the housing demand of industry workers, who started to arrive at

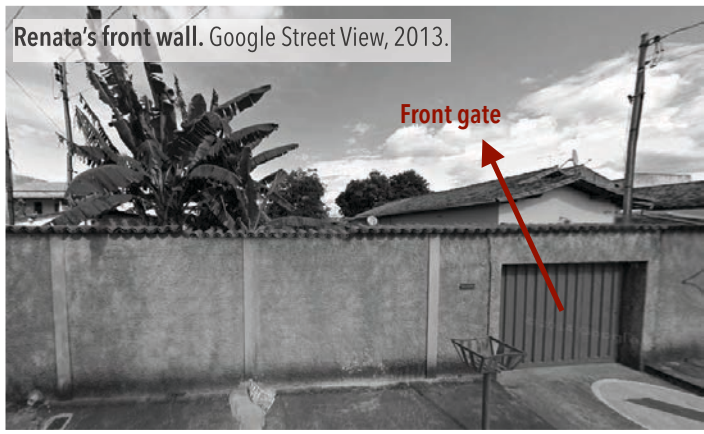
Contagem in the 60s. One of the informants reported that when people bought a plot, they were given for free a standard project of a small house. I am not sure if this model was followed by most of the dwellers at that time. Today, we cannot identify any pattern, since everything has been constantly changed to make way for new constructions. In São Joaquim it is very common to find sub-partition of plots. So, instead of the original form and area of the subdivision, which was 14m x 30m, we can now find many *chorizo* plots that are only 7m by 30m.

The area of São Joaquim where our cluster is located presents serious problems with its public drainage system. There are two streams crossing the place. One of them was covered and runs under the street where Oliver, Renata and João live. There is a second, larger one, along Severino Balesteros Avenue. The larger stream was very problematic until about 2003, when it was canalised. After that, the region started to develop, presenting more consumer options, like a new supermarket, new building materials shops, and restaurants.

In São Joaquim, the contact started with Oliver, a self-producer and self-builder whom I knew since 2008 because of his participation in the *Arquitetos da Família* project. Oliver has lived in the area since the 70s when he got married and bought the plot. He self-produced the house, and it has been renovated several times since then at different intervals. On many occasions, Oliver does the job himself. Similar to Flavia's (from Vila N. S. de Fátima) claims, Oliver says: "there is always something to be done". He was a formal lathe operator without a job and decided to start managing and producing small renovations and additions for neighbours to make a living. Oliver introduced me to other three neighbours. The second informant was the retired teacher Renata, who was at the moment renovating her house, one of those that has followed the standard project from the 70s.



Oliver's house. Google Street View, 2013.

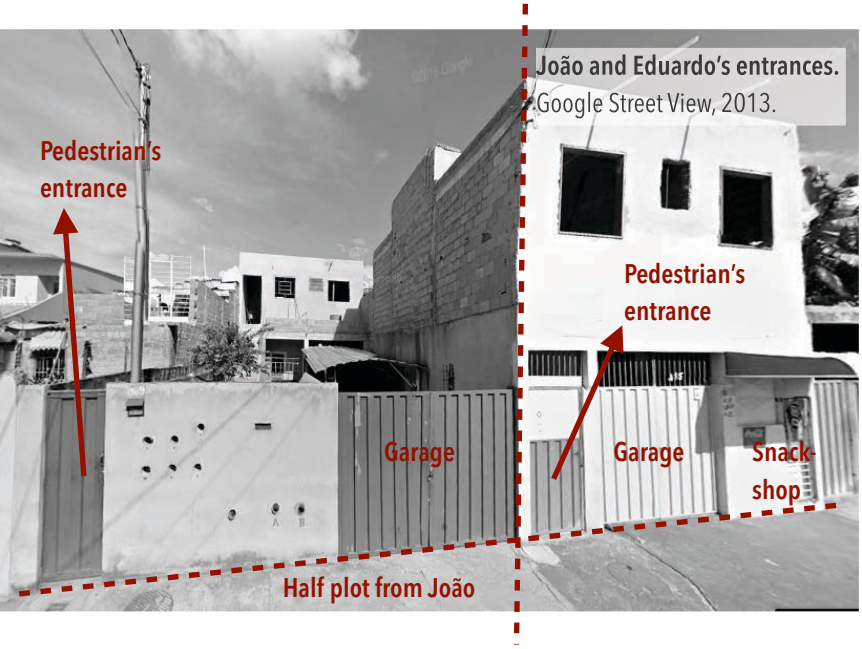


Renata's front wall. Google Street View, 2013.

Renata hired Oliver to manage all the construction process, as she has no time to do it because of her work. Oliver does it informally, but both parties are happy and profit from this relationship. Renata's dwelling has suffered floods on several occasions.

The public water piping system is under-dimensioned and both streams have burst their banks several times. Besides, Renata's house was built on a very low elevation, rendering it vulnerable to floods. According to her, the municipality had to build basins around the area to retain some water to try to mitigate the problem. She also confirmed that many people discard rubbish in the streams, which has only worsened the problem.

> When I arrived, there were no streets (...) I found out that here there were plots for sale. While talking to people, relatives, someone bought a plot here. (Renata, São Joaquim)



João and Eduardo's entrances. Google Street View, 2013.

The next two informants were Eduardo and João, who occupy one half of a plot each. **Eduardo** is a retired policeman who has been self-producing three housing units, establishing again a kind of horizontal condominium. He lives in one unit, rents the second and lends the third to one of his daughters. He has also installed a small boutique and a snack shop in two corners of the ground floor. The snack shop opens directly to the street.

Like Eduardo, **João** invested in the construction of more than one housing unit in his half-plot. The difference is that João, a painter and security guard who is married to an industry worker, builds the units exclusively for renting. The family resides in another house nearby, built seven years before on his mother-in-law's house. He switches between self-producing and self-building, according to his needs and time.

In 2013, two dwellings were already rented and he was about to finish another two. João has lived in the place since his childhood and decided to invest in the area, even though he was aware of the local drainage problems.

> A sewage pipe used to pass by here. This was the worst part of the neighbourhood. But as I used to live here for many years, I decided to buy here. (It was) like a forest, the stream was a chaos. I was born and grew up here. And I knew that one day here it would be nice. And then I invested and look: with three months the price I paid for here, after everything was correct and organised, somebody offered me more than double. I know these people since I was a kid. I moved here when I was 13 years old. I was born and raised here, so everybody here, they are all good people (João, São Joaquim).

JARDIM CANADÁ

Jardim Canadá is a peripheral formal subdivision, part of the territory of Nova Lima, a satellite town located in Belo Horizonte's southern metropolitan area. It is a region with beautiful mountains and waterfalls, which have attracted the interest of hotels, restaurants and, of course, the real estate market, which has established many gated communities in the area, including territories of Belo Horizonte and Brumadinho. Those communities are subdivisions with very large plots (most with more than 1000m^2) for the construction of mansions.

Jardim Canada is a subdivision created in the 50s, which remained abandoned for decades. In the mid-2000s, an intense process of occupation of that area by two segments of the society began. Besides wealthy families living in some of its many gated communities, Jardim Canadá has also attracted a low middle-income working class, people who directly serve as manpower for the mansions, as housemaids, babysitters, gardeners and drivers, or who work in several commercial enterprises addressed to serve the elites' needs.

Top-view Jardim Canadá, Google Earth, 2017.

Because of this process, Jardim Canadá has become a typical low-income subdivision. With plots sized at 12m x 30m, many of them are informally re-parcelled, and instead of one single house per plot, it is easy to find three or more housing units on the same plot, similar to small gated communities or horizontal condominiums, all informally established.

Until 2006, Jardim Canadá had no sewage pipes or paved streets. The demographic census from 2000 demonstrated an increase of the population of the south expansion axis of Belo Horizonte's metropolitan area, which represented not only the elite who had established the gated communities from Nova Lima and Brumadinho, but also the increase of a working-class population that labours for that elite class.

> In the metropolitan region of Belo Horizonte, the intensification of social distancing seems to have corresponded to the maintenance of a physical distance, with the expansion and peripheralisation of the housing spaces from high income segments in the same direction - the south of the metropolis - opposite to the periphery of poverty (North and West) (Mendonça, Perpétuo & Vargas, 2004, p. 1, my translation).

The elitist expansion to the south axis of the Belo Horizonte's metropolitan area directly reverberates on the practices of the working class. Apparently living costs are higher in Jardim Canadá than in other peripheral middle-sized subdivisions:

> Here is like, living costs are high, but there are many favourable things, I think. (...) Because of the many gated communities close by, everything is expensive. I think it's all, in general, absurd. (...) For you to see, to go to Belo Horizonte, you pay R$4. (...) There is the Alphaville bus, but the difference is small. Then I analyse, I and three kids who already pay, no, two, then four, paying transportation, so everything is expensive. (...) But there is everything here. There are good schools, there is a good health care centre, there is a city hall headquarters, today there is a good supermarket, (...) you see, but we need one more, to have competition (Hugo's wife, Jardim Canada).

Although more expensive, informants' daily activities are quite concentrated inside the district, and that includes job opportunities. This is very practical for those *battlers*, making their life easier and affordable.

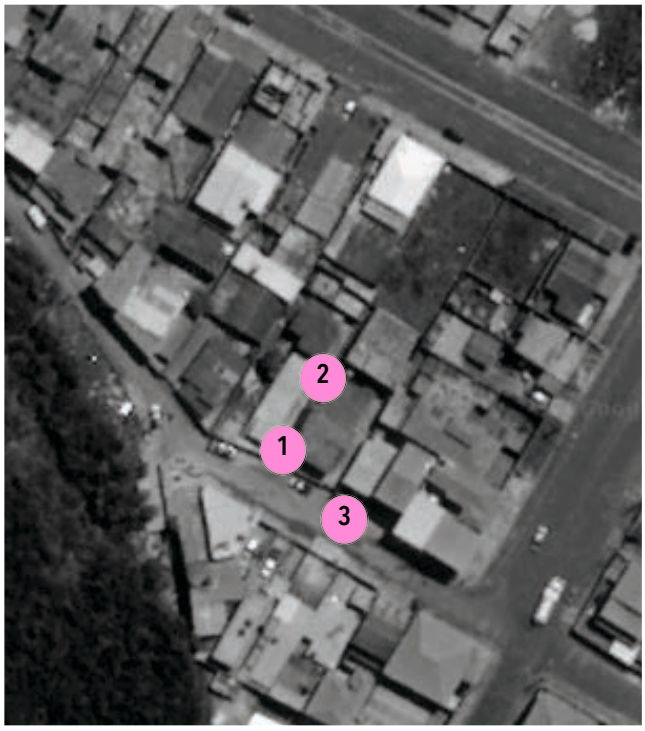
> The children - three go to school in the morning, one goes to nursery, in the afternoon the eldest comes home and the other two go to nursery. They arrive at 17:30 (Hugo, Jardim Canada).

> I like the neighbourhood. (...) Because there are a lot of services, right? And we came from the countryside, we came to work and we have been always very attached to work. I started to work when I was seven years old (Carlos, Jardim Canada).

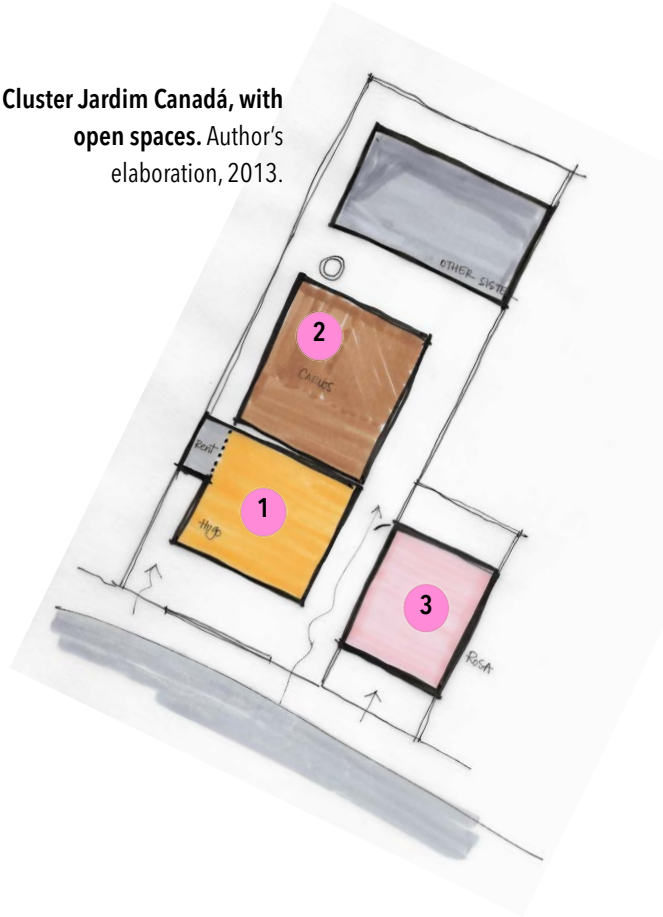
Like the people of Vila N. S. Fátima and to Vila Monte São José, many residents from Jardim Canadá come from the northeast of Minas Gerais. All three informants come from a small town of only 18,000 people.

> Everybody here comes from the countryside. We come from the north. So, very nice neighbours. People who like to stay outside, like you saw there (Hugo, Jardim Canadá).

At Jardim Canadá I could work with three housing units, which also constitute an investigation cluster. This cluster is especially interesting because two houses were built on the same plot, a result of the partition of one single family plot, a very common practice in that area, as previously explained.



Zoom Cluster Jardim Canadá. 1 - Hugo; 2 - Carlos; 3 - Rosa. Researcher's elaboration, 2013.



Cluster Jardim Canadá, with open spaces. Author's elaboration, 2013.

In Jardim Canadá I met **Hugo**, a young father of four children and his wife. Hugo works in a company specialising in the installation of fossil tanks and as delivery man in his spare time. His wife used to work as a housemaid in a gated community in the vicinity, but she left that job to work in a shop for decorative stones, which are mostly sold for ongoing construction of mansions. Both Hugo and his wife emigrated from the north of Minas Gerais to seek a better life at Jardim Canadá in the early 2000s. Hugo bought a plot together with one of his brothers and one of his sisters, and the three of them have self-produced their dwellings. I worked with the two brothers, Hugo and Carlos, and with Rosa, a fourth sister who lives beside them in a small parcel which is also the result of an informal partition, but on the plot next to theirs. I was not able to interview the sister who lives on the same plot as the two brothers.

Hugo and Carlos's condominium. Google Street View, 2013.

Carlos works in a building materials shop and lives with his nine-year-old son. His place is unfinished and much still has to be done. He arrived in the neighbourhood soon after his younger brother, Hugo. Although he enjoys better conditions and a relatively stable job in comparison to the hard life of the countryside, where he worked in the agricultural fields, planting and harvesting, his establishment in the big city was not easy. He had to work extremely hard to have the resources to buy the plot and build the first walls of his house.

Rosa's front wall. Google Street View, 2013.

Rosa is a recently divorced mother of six children. She works as a professional cleaner. Previously she worked as a housemaid in a large mansion in one of the many gated communities close to Jardim Canadá. She and her ex-husband self-produced her dwelling together, with both having worked directly on the building site since they could not afford a bricklayer during the building process. She plans to build a second floor in the near future.

Pindorama

Located in the northwest part of Belo Horizonte, Pindorama is also a low income formal subdivision with regular medium-sized plots (12m x 30m).

The word *Pindorama* has native Indian origins and means "good soil to plant" or "land of palms" (Le Ven, Pereira & Pinto, 1972). There is very little available information about this neighbourhood:

> Generally it represents many other anonymous neighbourhoods from the periphery of Belo Horizonte, where the population, as anonymous as the place is, suffer the results of an unorganised urbanisation, or are simply manipulated, to attend commercial and financial central districts (Le Ven, Pereira & Pinto, 1972, p. 26, my translation).

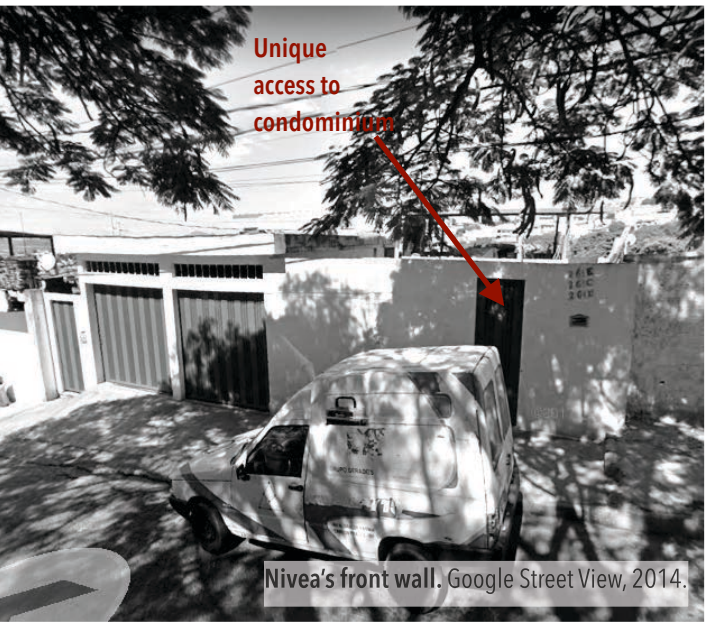
Zoom Nivea's place.
Google Earth, 2017.

Typical of other peripheral neighbourhoods of Belo Horizonte, this type of subdivision is the result of the partition of large unproductive farms, whose owners, having foreseen the growth of the city and expecting to profit from it, decided to divide the land in plots for the low income population. These people had only two options - to join informal settlements or to look for cheap plots around the city. Pindorama was, in the middle of the 50s, the second option. In order to start selling the parcelled property, which was named *Fazenda dos Coqueiros* (Palms' Farm), the investors opened only some streets, without providing any other infrastructure service.

Top-view Pindorama, Google Earth, 2017.

In the beginning there was no electricity, sewage pipes or running water. The first inhabitants came from farms from the vicinities where they used to work, or from downtown, where they used to rent

small houses in the back of other dwellings or rooms in *cortiços*[7] with bad sanitary conditions. Some of them had to sell plots they had bought in better neighbourhoods because they could not afford to live in such places anymore. The bus ride to the neighbourhood took me, in 2013, about one hour.



Nivea's front wall. Google Street View, 2014.

In Pindorama I was introduced to **Nivea**, a, waxing specialist, nurse, baker and small entrepreneur. She lives in a self-produced dwelling, one of the seven housing units built on only one plot, again a kind of informal gated community. The spatial organisation among dwellings and the relation between empty spaces and constructions are remarkable. She lives with her two sons while her siblings and her father live in the other six dwellings which have been built since the early 70s when the family arrived at the place. The first housing units were built on the lower part of the plot.

To conclude, the presented case studies are a good example of how social practices can disseminate only by watching and copying the next-door neighbour. People's actions are based on what they know and on what they experience in their everyday lives, so that neighbours become important references. When I was on one of the rooftops of Vila N. S. Fátima, I observed that many people were at that moment engaged in some kind of building work. In that neighbourhood, we can see that many social practices repeat: the recurrent type of small business - a grocery shop that works out as a snack-bar, which occupies one part of the family home; mini-flats for rent built in the underground using the empty space created by the inclination of the slope; the (new) practice of renting a pumping machine to bring concrete up to the last slab in more-than-one storey buildings; the use of pre-fabricated slabs instead of massive ones, etc. In São Joaquim, the spatial strategy proposed by Eduardo and João with the rental flats is a similar example. Both have an internal yard that guarantees natural illumination to all housing units. In Jardim Canadá, a whole family has re-parcelled a plot and each family, in their own ways, has managed to self-produce their dwellings, based, most of all, on cooperation.

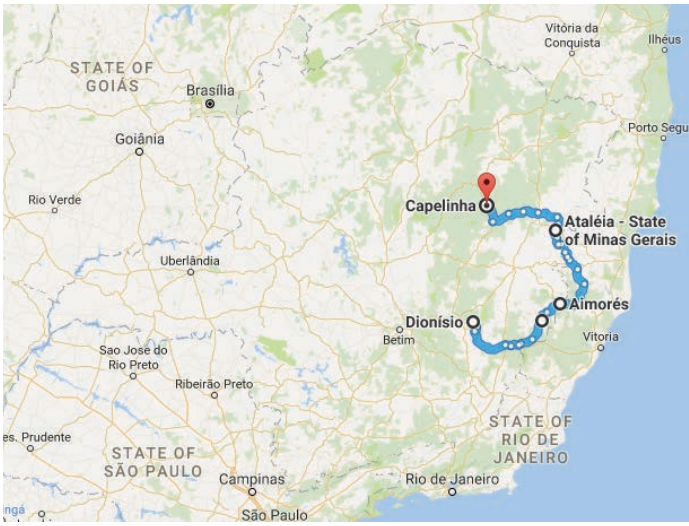
[7] Tenement houses.

In all fieldwork spots, there were always many active construction sites. I found it stimulating - "if my neighbour does it, why can I not do it as well"?

2.2 INFORMANTS AS *BATTLERS* - SOCIOECONOMIC ENVIRONMENT

MIGRATION

One of the common aspects among *battler self-producers* which most captured my attention during the fieldwork was that most of them had more or less the same migration background. As explained by Souza (2010), Brazilian *battlers,* in general, come from poor social origins and have, to some extent, left poverty behind and achieved economic gains. 60% of the case study's informants (nine of 15) were immigrants, almost all coming from the same region northeast of Minas Gerais, municipalities of Aimorés, Água Boa, Mutum, Ataléia, and Campo Azul. These informants were the first generation to arrive in the big city - Nely, Levy, Regina, Hugo, Carlos, Rosa and Carlota - or were sons and daughters of the first generation of migrants - Flavia and Cintia.



Informants' hometowns - Capelinha, Ataléia, Aimorés, Mutum and Dionisio. Google Maps, 2017.

Confirming the description of Chauí (1989), these people leave the scarcity of their hometowns to seek a better life in the big city. Their problem is that metropolitan life demands from them educational, social and cultural capitals to compete in the labour market, which they do not have. As confirmed by the informants of this research, many migrants find work and do not come back. However, the advantages of this big change tend to be more economic than social, since their gains depend on their salaried work, which allows them able to consume. The access to social rights is a different matter, which remains left aside in the big city[8]. As previously explained, the socioeconomic rise of Brazilian *battlers* is strongly based on the purchase of basic needs by those who can afford them. In the big city, poor migrants

[8] Roy (2004) comments about the work of photojournalist Popko (Transitions: A Photographic Documentary of Squatter Settlements, 1978). He considers the urban poor as part of the machine that runs the political economy of urbanisation. I agree with Roy when she says that "urban growth is the result of a hunger-dictated 'push' from the country rather than an economic 'pull' from the city". Nevertheless, she claims that the benefits are more social than economic. I tend to disagree with that, given the context within which the socioeconomic rise of Brazilian *battlers* takes place. In our case, the rise is more economic than social.

> (...) become unqualified workers (in industry and civil construction) or perform daily tasks that demand little expertise. The worker who knows how to build an entire house, if he turns into a construction worker, remains restricted to manual tasks that make no sense to him (...) In women's cases, they are then taken to the labour market, in industries, offices and households. They are subjected to a process of socialisation that invalidates their previous culture (...) (Chauí, 1989, p. 37, my translation).

Normally urban migrants are influenced by other relatives who have come before them, who may offer them some support in the beginning of the new life. Since they were used to working in subsistence farming or as cheap manpower for big agribusiness farms, they had no educational background and ended up getting the worst paid and simplest jobs in the big city. Usually, men started working as doormen and as helpers on construction sites, as did Nely's nephew and husband, Carlota's husband, and Cintia's father. As mentioned by Chauí, women started working as housemaids, cleaners and babysitters, as Cintia did before she opened her own business, and as Nely, Rosa and Carlota still do. On the other hand, Hugo and his brother Carlos started working in a building materials shop, a local demand in Jardim Canadá, which has many building materials shops to serve the constructions in the gated communities in the surrounding areas.

> I came from Capelinha, but the town where I was born is called Água Boa. But when I came here, really, it was good, but if I had no opinion, I would not stay. Because in the countryside I had everything, I had a house, of course, I lived at my parents, but I had a house, food, washed clothes. When I came here I had to cook myself, to wash my clothes, I had no friends. (...) I thought, if I come back there, what would I do? The same things I was running from. Here I had opportunities that there I did not have. There I had no opportunities. I worked too much, with no opportunities. The life was only to cultivate, to harvest, to sell cheap to the others and to have no other opportunities, nothing. Here is different. I saw that the market for me was nice. Because in eight years you buy a plot, and build and... to do what I did here, earning a minimum salary, is not for everyone. And everything here was our idea. There was no engineer, no architect, nobody here to give some ideas. We exchanged our own ideas and kept doing (Hugo, Jardim Canadá).

What Hugo describes is an outcome, on the micro level, of the land tenure system inherited from colonial times. Rural Brazil was basically organised in two extremes, large land properties or small subsistence farms, both conducive to emigration (Tiwari, Rao & Day, 2016).

The words of Hugo are very similar to the experiences of other informants who have emigrated as well. Hugo was the second of his family to arrive, following his sister Rosa, who came alone with a friend. Some months later Carlos also arrived, and all of them had to live with each other in improvised rented rooms. Claiming a lack of work opportunities, Carlota's family also came -- invited by her brother-in-law, who had arrived some years earlier. He offered them a small piece of land, where they first built a small wooden hut. Nely, who left northeastern Minas Gerais at a very young age, brought her two younger brothers some years later. Although her husband also comes from the same region, they first met at *Aglomerado da Serra*. The same thing happened to Hugo and his wife. Both come from the same town, but first met in Nova Lima. Today they have four children.

> Because nobody worked there. Only my husband used to work. There was no work for us [Carlota and two daughters]. We helped, in the fields, but a little, not much, because the work is too heavy. And when we arrived here, we soon got a job. My daughter continued to study, and my other daughter as well, the younger, and we kept working, facing lots of difficulties at that time when we came here. But today, thank God, we are here (Carlota, Vila Monte São José).

The newcomers do whatever necessary to start working. After some years in the big city, all informants were able to establish themselves professionally.

WORKING ROUTINES

As we can see in the table, *Informants' socioeconomic aspects* on pages 315-317, they work in different fields, from public service employees to self-employed construction workers. Some of them could continue their studies later, and all of them can assure an education for their children. The children attend public (or in some cases) private schools. Sons and daughters from the first generation of immigrants clearly have a higher educational level than their parents, who had no time to attend school. Schooling is for those who have time, for those who do not have to go to work. For the first generation of *battlers*, the focus was always the work, to provide subsistence for the family and to ensure access to school for the next generations. The career path is not a straight line for *battlers*. Working is a priority for the older generations, despite a lack of education. Some of them have the chance to study later, although they do not leave their jobs to dedicate themselves exclusively to their studies. The young generations of Brazilian *battlers* are the students who acquire technical

qualifications in night courses, attend preparatory courses, and finance courses at private universities. All these activities always happen in parallel.

> I did (the course) at SENAC, facial aesthetics, then I did the waxing course. When I finished the second degree I got married. Then I did the facial aesthetics course, the body aesthetics course and the nursery course. Why? Because for the course of aesthetics I needed a fixed job. And aesthetics, aesthetics is like that, people do when they can, when they have money. If the money is short, they do not do anymore. Of course, they would take the expenses with beauty out. So, for me, it could not be only that. Then I went for auxiliary-nursery and I went to work. (...) The course took two-and-a-half years. Auxiliary-nursery. Actually, I did auxiliary first (...) I did the technical course. Then I worked in the area. And then after some time, about three years, I finished pedagogy. It was recently. I had my two boys already (Nivea, Pindorama).

Cintia's father says he never had leisure time. For him there were never weekends or holidays. All the money he earned was to "bring food home". He worked as a cleaner, as a doorman, in a factory, and even used to breed swine in the free spaces of the Vila N. S. Fátima, when "everything was bushes". He had always hired local people to build for him, since he personally did not know how to build. Moreover, the family could count on the children, who from an early age started to work and to contribute to the household.

> When we were around seven years old, we started to do small jobs, to work at people's homes, as housemaids, babysitters for example. With 14 all of us, we already worked and helped (Cintia, Vila N. S. Fátima).

The routine of Cintia's father about 30 years ago, when he had just arrived from the countryside, was very similar to the current routine of his daughter and of João, from São Joaquim, in the beginning of the 2000s. In Vila N. S. Fátima, Cintia opens the grocery shop at 7 a.m. and closes at 10 p.m., every day except on Sundays. Besides attending to customers, she has to prepare snacks and the day's menu. A similarly exhaustive routine happens with João in São Joaquim. Since he got married about 25 years ago, he has always had more than one occupation. For a long time, he worked as a private security guard, Monday through Friday from 2 p.m. to 10 p.m. This was a formal job with the usual social benefits, such as a vacation and a thirteenth salary. He had two other secondary occupations, which he did in parallel. Every morning, before going to work as a security guard, he worked as a freelance painter for private clients. Eventually, as he got to know many people in the field of private security, he

also worked as a freelance security guard for events like weddings and graduation parties, all night long from Saturday to Sunday. When I asked how he managed all that, he quietly answered:

> We are used to do it... (João, São Joaquim)

The situation is more or less the same for Rosa in Jardim Canada, who uses her vacation time to informally work for the same company that regularly employs her:

> I am a cleaner. I work from 6:40 a.m. to 5p.m. Today I am on vacation. But I work at the accommodation these days, but separately, do you understand? It belongs to the company but it is separate. It is not registered, it is separate. At the company I work registered and I separately clean this accommodation when I am on vacation (Rosa, Jardim Canadá).

EDUCATION

Extended working hours are combined with an enormous effort to acquire educational capital. In a capitalistic society, where qualifications are an important asset to achieve social mobility, education is a necessary preparation to avoid a future of poverty. Although Flavia holds two bachelor degrees, one master's and a good job, life has not always been easy for her. She finished secondary school in 1996. Immediately afterwards, in 1997, she started working in a grocery shop. In 2000, she worked during the day and attended a preparatory night course to enter the university. This course was private, but the cheapest she could find at the time. In 2001, she passed the examinations and started a bachelor's program in pedagogy in a semi-public university. She made an agreement with her boss to be dismissed, rather than asking to leave, in order to receive social insurance benefits. During her first months as a pedagogy student, she did not have a job, but used the insurance money and some savings to meet her personal needs. Soon thereafter, she started working part-time as an intern. She finished her studies in 2005 and immediately passed an examination for a good public job. In 2006, she decided to start another bachelor's program, this time in Business Administration, in a private university where she was awarded a 90% scholarship. She decided to go for her BA because of her experiences at the grocery shop, where she had worked as an administrative assistant. For some time, she worked during the day and studied at night. After finishing her second bachelor's, she started a master's program in pedagogy in one of the best public universities in the country.

Flavia is an exception in her community and even in her family. Still, her experiences confirm that the path to a university degree and a stable job cannot be taken for granted by *battlers*, since it is not a one-way ride from secondary school straight to the bachelor's degree, as is often the case with young people from the traditional upper-middle class. *Battlers* normally have to work from a very young age to contribute in the household and to maintain their personal expenses when they grow up, even if they live in the family house.

Levy is also an example of an unorthodox path towards a stable career as a civil engineer. Brought by his sister Nely, he arrived in the neighbourhood in 1994 when he was only 13 years old. He started working at small jobs, in grocery shops and snack bars. Through an acquaintance of his sister, he soon started to work in a small furniture business when he was 15 years old. For the first four months he had to work for free to learn the business, and then continued working there for two years. After leaving this job at the age of 18, he opened a pinball game shop, using a small free space available in the house of his sister. In 1998, he went back to the furniture business, assembling and selling kitchen cabinets until 2002. Then 21 years old, he started his own business of selling furniture, where he continued working until the time of the fieldwork in 2013. In 2004, he bought a piece of land to invest in the local real estate market. In 2009, he started to building a three-storey building with 12 flats for rent. His experiences on the building site influenced him to resume his education, and he started studying civil engineering in 2011 after attending a preparatory night course to pass the entrance examination. According to him, he did not start studying earlier because his focus was strictly work. Although his passion is law, he says that civil engineering is "the reality". He decided to pursue it because it was something he was already in contact with, and construction is a field in which he could visualise himself.

As demonstrated by these experiences, before achieving some level of economic stability, *battlers* have to work simultaneously in many different occupations, normally with very long working hours, to provide for their basic needs and some of their consumer dreams.

Battlers have still to face difficulties imposed by highly competitive market conditions, effects of flexible capitalism and of globalisation. Oliver used to work as a self-employed lathe operator, until the Chinese came and "took all the market". After losing many job opportunities, he decided to start working as a master builder. As he is a very skilled craftsman with experience in construction - he self-built almost all

of his family's house - he started to manage small building sites in the vicinity, working for his neighbours as a master builder and as a bricklayer, together with a friend. We can see in his case just how complex self-production practices have become. Oliver is a self-producer and a self-builder who has used the experience he accumulated to get an occupation in the construction field, working cheaply for people who have always self-produced their homes, but now pay Oliver for this task. He works about 12 hours a day, from 7 a.m. to 7 p.m. Despite all the difficulties, he has enjoyed the job:

> (...) it is good. It is still a bit confusing, because we are a bit like amateurs regarding organisation, but we are trying to become professionals. Let's see if we can get parallel work, there is a new work now, an addition... (Oliver, São Joaquim).

We can notice that the young generations have a different relationship to work and education than their parents and grandparents. All informants' children dedicate themselves exclusively to study, at least until the last years of secondary school, when they are about 16 years old. From 53 individuals (informants and their family members), two have a master's degree and three a bachelor's degree. Some of the older couples have adult children who also study in a university, but they were not counted because they no longer live with their parents. As Mills described the American "white- collar" workers:

> Parents have sacrificed to have even one child finish high school, business school, or college so that he could be the assistant to the executive, do the filing, type the letter, teach school, work in the government office, do something requiring technical skills: hold a white-collar job (Mills, 1951, p. xiii).

As we can see in the table below, at the time of the fieldwork in 2013, 15 case studies included 53 dwellers from 13 households, since two constructions were flats for rent. Each household presented a principal informant, so that we had also 13 informants. Of 53 dwellers, ten were children under 10 years old, who were all attending school or nursery. We then had 43 dwellers above the age of 10 years. Among them, 15 had a secondary occupation, which provided an extra income source to the family. Of the 13 families, 11 have invested economic resources in flats for rent, self-producing in the surroundings of their homes or transforming part of their dwellings in separate flats, to have one extra source of income.

Numbers on field

case studies	15
informants	13
households	4
mix use (households and income source)	9
enterprises (real estate - rental flats)	2 (João and Eduardo)
residents	53
children < 10 years old	10

We can clearly see how home ownership (not necessarily ownership titles) plays an important role in the maintenance of *battlers'* socioeconomic life. On the one side, the home is a safe haven for *battlers* - the shelter where their families are protected. On the other, it is a means of saving resources, since the home owners no longer have to pay rent. Besides, it can increase the family income by using part of the dwellings as their own businesses.

Cooperation

In any case, families form a kind of unit of cooperative production. Beginning at a very young age, *battlers* contribute to the household with economic resources coming from small jobs that teenagers have in parallel with their school or with everyday small responsibilities in the household. When they decided to start building a new house, Flavia's mother and sister had formal jobs and Flavia just had finished school. As she was unemployed, her task was to take care of the ongoing construction site. Sometime later, when Flavia's daughter was born, the mother decided to retire. As the two sisters were continuously working, there was no need for the mother to work anymore. So, she could be responsible for domestic tasks and for taking care of the baby. Before that, the mother 's income was allocated to her survival and that of her children, providing food, clothing, transportation, and health care. The daughters' incomes were allocated to renovating the house and purchasing consumer items. Before her retirement, the mother's income was the survival basis for the sisters to self-produce their house.

Another typical example is the relationship among Nely and her nephews and niece. Levy and his brother have lived with her and her family since they were teenagers. Levy never had to spend any money on housing, so he was able to save and start his own business in an early age. Nely still takes care of one niece. The family has an elaborate arrangement to support each other, which even involves another nephew who does not live in the same house, but close by. His children stay with Nely's family after school, waiting for their dad to come and pick them up. He comes late because he closes Levy's shop every evening, as Levy's classes start at 7 p.m.

RELIGION

Home ownership keeps the family protected, and the family is the fundament of cooperative relationships, which makes life not only easier, but feasible. For that, families count on an important companion in their everyday life - God. Their spirituality plays an important role in keeping familiar systems united and productive. Although I have not included "religion" among the interview topics, all informants have at some point mentioned God to express their thankfulness or to demonstrate their trust that God would protect them against any misfortune in life. At the same time, when I asked if they had any fears during the building process, all of them immediately answered "no", because God would protect them, regardless of the particular religious beliefs they professed (some were members of neo-charismatic churches). I could see in these people a comforting feeling, almost mitigatory, since they have very few options against their everyday struggles (Chauí, 1989).

Undoubtedly, religiosity plays a role in the type of capitalism that has been practiced and is still maintained. The atmosphere of a "straight life" has prevailed among most informants. The ethic of hard work has shaped the *battlers' habitus*. In Brazil this ethic has been strongly guided by neo-charismatic religious beliefs and practices, which influence every aspect of social life (Souza, 2010). Neo-charismatic beliefs tend to reinforce competition and precarious working conditions, one of the bases of the economic rise of the *battlers,* both as consumers and as employees of consumerism.

The expansion of neo-charismatic churches in Brazil during the last decades corresponds with the rise of a new capitalist spirit that legitimises social inequality in the periphery of the capitalism. This new spirit encourages *battlers* in the pursuit of "success" in life by means of exhaustive working hours and unlimited consumption. In this way, it reproduces lifestyles which increase social inequality (Torres, 2007).

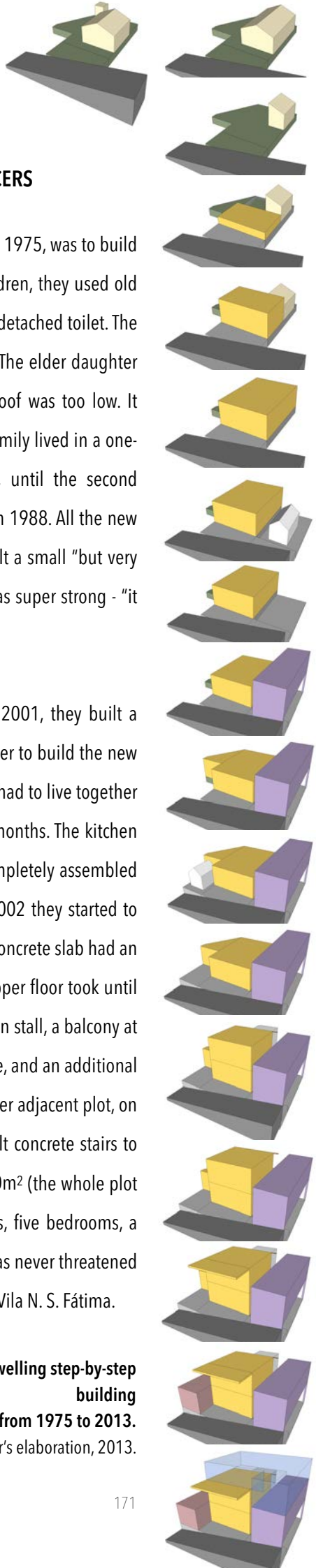
The adherence of a great many Brazilian *battlers* to neo-charismatic churches (Souza, 2010) reflects - in the words of Weber - "the influence of certain religious ideas on the development of an economic spirit, or the 'ethos' of an economic system" (Weber, 1976, p. 27). We could ask ourselves, and them, once they have attended to their basic needs, to what extent "the opportunity of earning more was less attractive than to work less" (Weber, 1976, p.60). *Battlers* are not ordinarily unsatisfied, but independently of religion, they are enormously influenced by the constant new consumerist demands created by contemporary capitalism and strongly reinforced by the cultural industry on TV and on the

internet. The problem is that the needs of people cannot be seen as true or false, but their everyday life can be better understood by examining who they are, where they came from, and why they do what they do.

2.3 Informants as self-producers - First steps as self-producers

The first task encountered by Flavia's mother, when she arrived at Vila N. S. Fátima in 1975, was to build a fence to delimit the territory of her piece of land. Together with some of her children, they used old bedsprings found somewhere close by. Inside the plot there was a small hut with a detached toilet. The first improvement made was the installation of an *asbestos* roof in the same year. The elder daughter still remembers that only after having finished the job, they observed that the roof was too low. It remained like that for years, because they could not afford to re-do the work. This family lived in a one-room hut covered by an *asbestos* roof and detached bathroom for 13 years, until the second improvement - the construction of two other rooms and one "normal" bathroom - in 1988. All the new spaces were built by the only man in the family, Flavia's brother, who, in 1990 built a small "but very strong" slab on the top of a ravine, with the help of his sisters. They say the slab was super strong - "it could support a real building on top".

Before they began the construction of the ground floor of the current house in 2001, they built a separate kitchen, bought the land next door and demolished an existing hut. In order to build the new house, they demolished the old one, but kept one room and the bathroom. They all had to live together during the construction of the first embryo of the new house. It took about eight months. The kitchen was outside, completely open. When the rainy season started, the slab was not completely assembled and they almost lost all their belongings because the rainwater came inside. In 2002 they started to build the upper floor of the house, although they left the stairs for a later time. The concrete slab had an aperture where the stairs would fit. The process of building the ground floor and upper floor took until 2004. From 2005 to 2008 the family made many improvements. They built a chicken stall, a balcony at the back part of the house from which they had a wonderful view of the city, a garage, and an additional bedroom for one of the sisters who was returning home. In 2013 they bought another adjacent plot, on which another sister intended to build a pizzeria. In the same year, the family built concrete stairs to access the rooftop, for which they have future plans. Flavia's home is more than 150m² (the whole plot is more than 200m²[9]) with a living room, office, dining room, kitchen, two toilets, five bedrooms, a chicken stall and garage, distributed in two floors, besides the rooftop. This family was never threatened to be relocated, as happened with Cintia's family in her first home in another part of Vila N. S. Fátima.



Flavia's dwelling step-by-step building from 1975 to 2013.
Author's elaboration, 2013.

[9] The areas of all dwellings and plots described in this thesis were estimated, based on the visits during the fieldwork.

Cintia's condominium. a - scheme of housing units, b - longitudinal section, c - housing unit D2, d - snack-bar, e - housing unit D1 with access to Porch (P), f - housing unit D3 , g - housing unit D4. Author's elaboration, 2013.

After being removed because of the construction of Avenida do Cardoso, Cintia and her parents had to start over with nothing. In 2009, they bought a new plot of land of about 200m² with two small, old huts (D3 and D4). One of Cintia's sisters went to live at D3 to avoid paying rent. In three months they built another small house (D1) and moved in. From 2009 to 2012, they managed to self-produce two dwellings (the first D1 and afterwards D2), where they lived until 2013. Besides the snack-bar (Bar) (their main income source) there is a porch (P) where they cultivate flowers and herbs. By 2013, they started to build another two housing units (D5 and D6). At that time, they had five housing units and the bar. As we can see, Cintia and her parents self-produced a kind of informal condominium. The idea was to live in the dwelling located just under the snack-bar (D5) and to rent out the dwellings D6, D1 and D2. The bar remains working, managed by Cintia, and dwellings D3 and D4 are too old to be used as housing units. Today, the family owns more than 400m² of built area, distributed in seven different levels over the terrain. Each housing unit has two bedrooms, a living room, bathroom, kitchen and laundry[10].

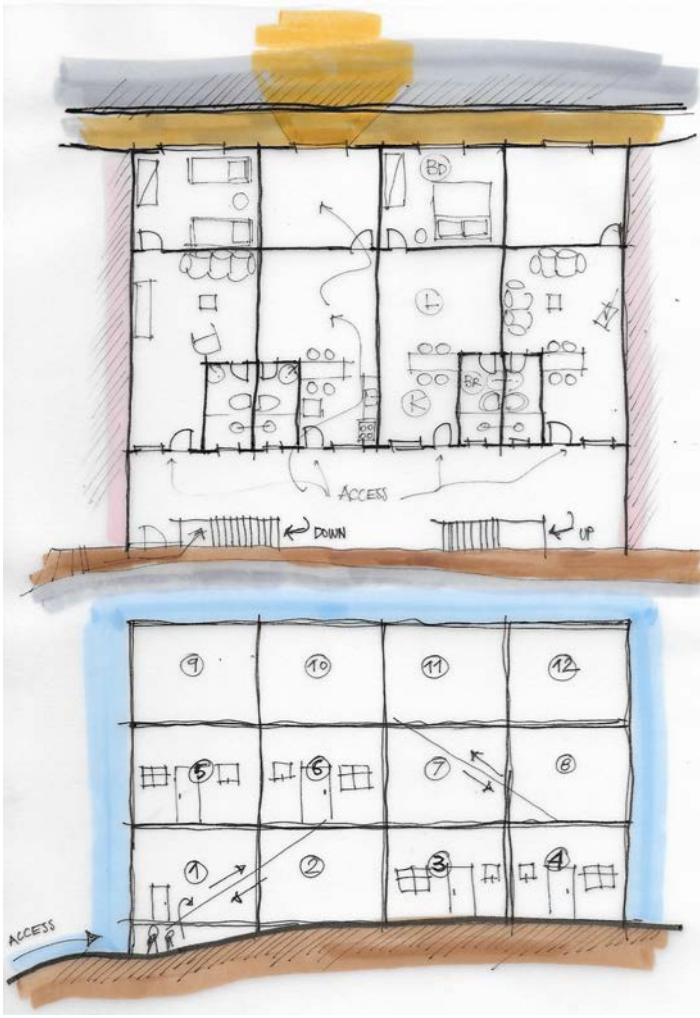
After ten years living in Vila N. S. Fátima, Levy started his own real state enterprise. In 2004 he bought 170m² of flat land, which he calls "approximately a half-plot", using the standard plot size from Belo Horizonte as a reference (in most Belo Horizonte's neighbourhoods, plots have 360m²). Levy's plan was to build a small apartment building for rent. He started to build in 2009.

[10] In all floor and section plans presented in the thesis, I have used the following codification for rooms: K=kitchen, L=living room, Br = bathroom, Bd = bedroom, Dr = dining room, L= laundry.

His enterprise consists of four 28m² flats built in a row, repeated in three storeys. So, the building has 12 flats with a living room, bedroom, bathroom and kitchen. Each unit has also a laundry area in the entrance corridor, where the staircases are located.

Levy measured the land, locally researched the type of soil, defined the type and depth of the foundations, and dug the holes all by himself. He said he talked to local experts, workers and old residents, because "at that time I [he] did not understand anything about construction".

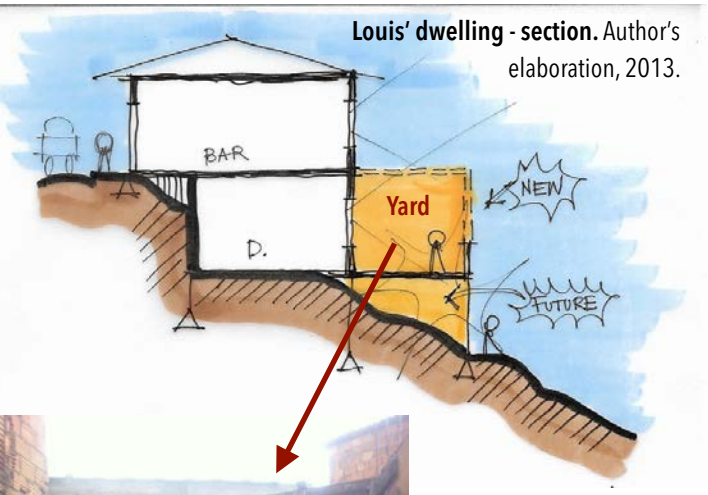
Levy's main idea was to build one floor at a time. Then he could rent the first four flats and re-invest the money in the building site and continue building. The first step was to work on the basic structure for each floor (slabs, walls, columns and beams), then some finishings inside the flats and afterwards on external finishings, protection grating and panelling of the external corridor. The building process started with foundations, then concrete columns, brick exterior and interior walls, only for the first floor.



Levy's enterprise - ground plan and section.
Author's elaboration 2013.

A local painter was in charge of the painting. Levy did not close the structure frame of the first floor with superior beams immediately. With the help of his brother, he installed hydraulic pipes for the laundry.

After a short pause in 2009, the building process continued. Levy hired an "*encarregado*", a person in charge of the building site, normally the foreman of a team of construction workers. The team have built the missing beams and assembled new slabs. The working team stuccoed, installed tiles, installed electric cables, water and sewage pipes from inside. By the end of 2011, the first floor was almost finished. In 2012 he started building the second floor, finishing in May 2013. The sequence was the same. By the end of 2013, all eight flats were rented.

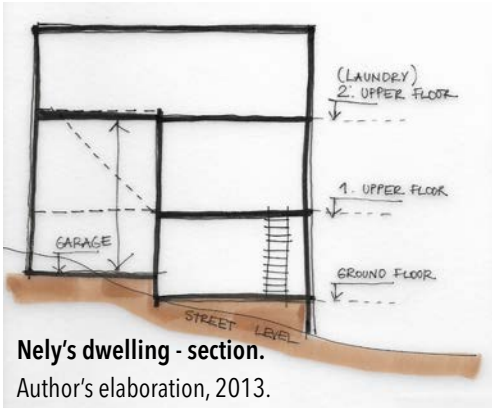


Louis' dwelling - section. Author's elaboration, 2013.

When Louis' father bought the place where the family lives, he immediately started to build a snack bar on the street level (Bar), where he used to work before he passed away. In the underground floor, his father built the family home (D). Louis, his parents and brother have always lived like this. Since the death of the father, the snack bar has been rented and they remain living in the underground house. The house (D) has two rooms, a living room, kitchen and toilet, occupying about 50m², approximately the same area as the yard. The bar is around double the area of the yard.

Structural frame on Louis yard. Author's file, 2013.

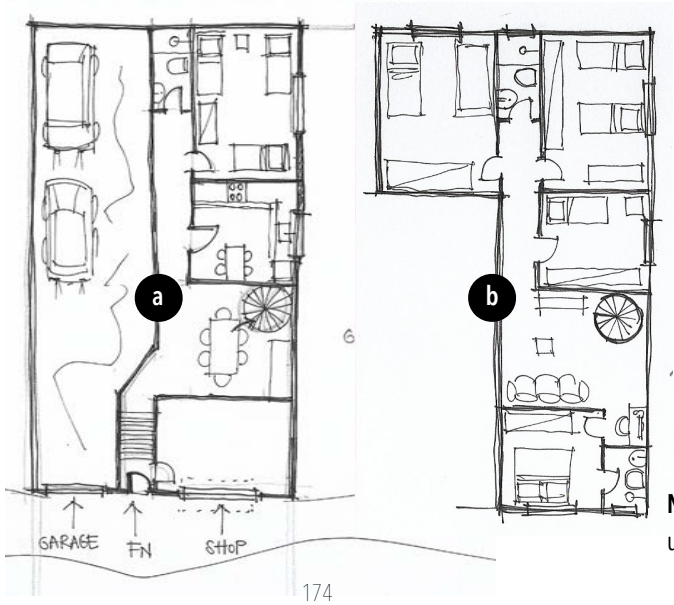
In 2013, Louis had the idea of assembling a concrete frame behind the house, on the current backyard, where a pre-fabricated brick slab would lay. This was meant to function as a porch, providing a view of the city. On it he intended to build a new housing unit, so the family could stop living underground, an old desire of Louis' mother. Louis' first task was to build concrete columns and the corresponding beams to close the frame.



Nely's dwelling - section. Author's elaboration, 2013.

It was difficult to understand exactly what his plans were. To me, the concrete frame was fundamental to visualise what he was going to build afterwards. I imagine that for him it was the same. The concrete framework served as a kind of imaginary wire frame, which makes it easier for people to have a better idea of dimensions and proportions.

After their marriage, Nely and her husband lived in an old house, up on the hill in the same neighbourhood. They decided to sell the house so they could buy the current plot, which happened some time later in 1998. Since then, her husband worked on the construction of the ground floor and of a small shop, open to the street, every weekend. They built the basics for the house and moved in. Afterwards, they started to build the second floor and the concrete slab, reserving the space to install a staircase later.



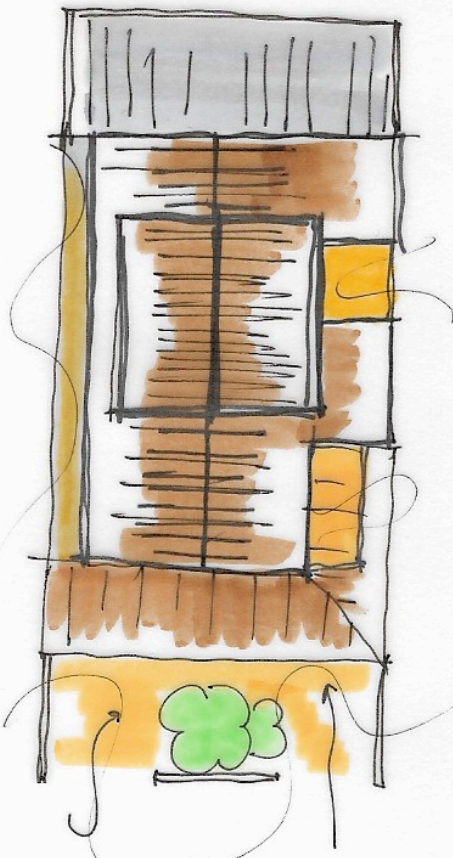
Nely's dwelling. a - ground floor and b - upper floor**.** Author's elaboration, 2013.

All the construction was done by a single bricklayer, with the help of Nely's husband. They also counted on the help of friends and neighbours to build the concrete slab on a Saturday. As usual, Nely prepared them a barbecue as a demonstration of gratitude.

By 2013, the family's home was approximately 100m2, with three bedrooms, a living room, dining room, kitchen and one common bathroom. Nely's aim in 2013 was to promote big spatial changes in the house, which would add one bedroom and renovate the kitchen. Those plans especially called my attention to how interesting they were. They will be discussed in detail in the Part IIII - 3. Space and creative power.

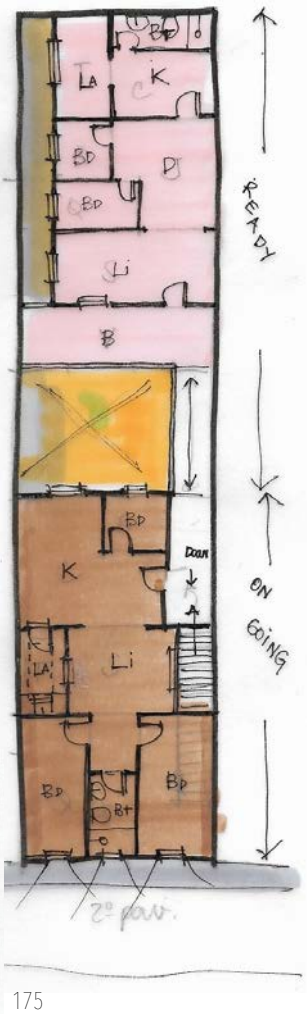
Oliver and his wife arrived in São Joaquim in 1980, attracted by the cheap price for plots in the area. Oliver found it impossible to purchase land in a central neighbourhood and decided to start his life in Contagem, the main expansion area of Belo Horizonte's Metropolitan Area during that time. He began self-producing a small embryo containing a big kitchen, bathroom and two rooms, which still exist, but integrated with the current house (see page 206), after many renovations and changes Oliver has made since then. He says that at that time the infrastructure of the neighbourhood was very precarious and aggravated by the big flood of 1983. He, his wife and their first newborn daughter had to leave the neighbourhood and to live in a rental property for some years. In the beginning of the 90s the family returned, motivated by the construction of Oliver's workshop on the back part of the plot. Since then, they have self-produced many renovations and changes to the house with few pauses. Today, the house is approximately 180m2.

After having moved twice, Eduardo finally bought a half-plot at São Joaquim (180m2), the neighbourhood of his childhood. He started to build it slowly, with the help of friends, occasionally paying a cheap bricklayer. The first step was to build the ground floor of the dwelling D2, which is today rented out. At that time, around 1994, he did not envisage all that he managed to achieve twenty-five years later. The dwelling D2 was initially the family's home, and only decades later became a living space for rent.

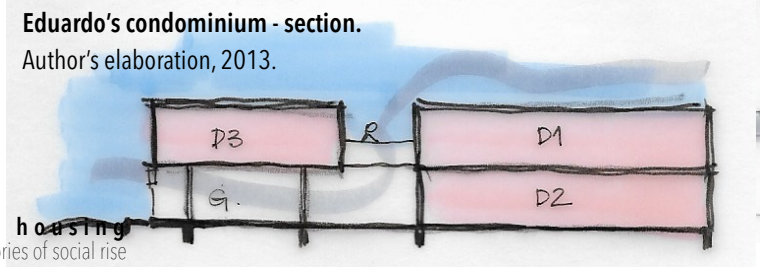


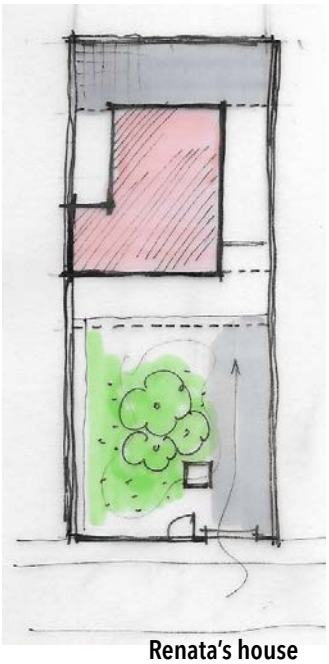
Oliver's dwelling top view.
Author's elaboration, 2013.

Eduardo's condominium - upper floor. Rosé = D1, Brown = D3.
Author's elaboration, 2013.



Eduardo's condominium - section.
Author's elaboration, 2013.





Renata's house - top view.
Author's elaboration, 2013.

At that time, the neighbourhood was new and there was almost no one living there. Eduardo built an initial embryo - brick walls and covering slab on two rooms, living room, kitchen, laundry, bathroom, and the family moved in. Slowly thereafter, he started to work with windows and finishings - tiles and painting. The house was somehow ready in 1995. He managed to do everything at once, which still took two to three years because of loans he took out with his employer. After a while, Eduardo expanded the house to add a second floor (D1), building two bedrooms for his children. He wanted them to sleep in privacy, separating the girls from the boy. After this expansion, he started building on the front part of the plot, constructing a garage and rooms for two small shops.

In 2013 Eduardo started to build a rental apartment on the second floor (D3), on the top of the garage (G). This housing unit also has two bedrooms, a living room, kitchen and bathroom. Today, his family lives in dwelling D1, and dwellings D2 and D3 are for rent.

Soon after they purchased a plot, Renata and her husband gradually started building their house, according to an architecture project offered by the municipality to those who have bought plots in the neighbourhood. Like many other informants, they built a basic embryo with a ready bathroom and moved in.

> I had almost nothing, but I moved in. I was very poor, I had to move in, we had to go out from renting. We moved in without windows, with almost nothing inside. In '83. I came with the bathroom ready (Renata, São Joaquim).

In 1992, because of her husband's illness, they had to move out. He needed to use a wheel chair and the floor was not adequate for that. Renata told me that it was very hard to deal with him. While they were living with relatives they could change the type of the tiles on the floor and paint the house.

After her husband's death, in 2007, Renata's life became easier, and since then she could begin saving. In 2013, she started to renovate the house, which had remained exactly the same for more than a decade. The house needed to have the roof repaired, and many drainage improvements were also necessary. Besides, Renata intended to transform the former garage into a classroom, since she works at home as a private teacher for children. Although the family produced the house exactly according to the plans they received from the municipality in the 80s, they do not have an occupancy licence. So, like

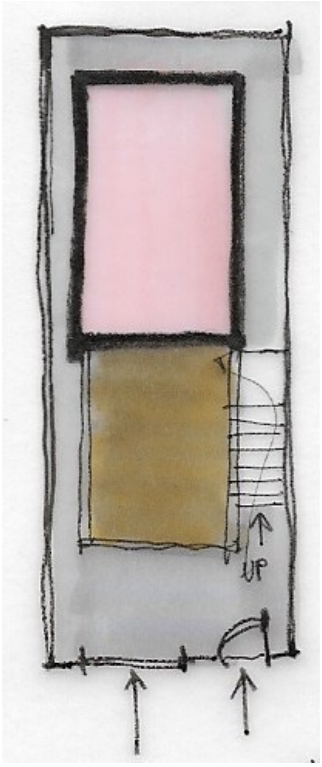
Oliver, Renata is a typical case of hybrid irregularity - the plot is regular, but the house is not, since it was built informally and was never approved by the municipality.

Like Eduardo, who moved several times before ultimately settling in São Joaquim, João has moved twice and has always self-produced his dwellings, either for living in or for renting. João is also a self-builder, acting not only as a helper, but as the foreman of the building processes he has gone through. When his former girlfriend (today his wife) got pregnant in 1985, they built a small hut on his mother-in-law's plot, somewhere in the same neighbourhood.

Ten years later, in 1995, they started building their definitive home on the second floor of his mother-in-law's house in São Joaquim (see "João's home - top view"). They took seven years to produce two bedrooms, a living and dining room, kitchen, bathroom and laundry. João said that the configuration of the walls from the upper floor exactly follows the configuration of the ground floor, because he did not want to put too much stress on the existing structure. The sequence of the construction was conventional. First he built the concrete frame, then the brick walls, and finally the slab. It is not clear if the upper floor is exactly like the ground floor because the upper floor has a free space in the front, indicating that the ground floor is actually bigger.

In 2000 João decided to buy a half-plot - the other half next to Eduardo's. His plan was to build a small rental unit independent from the family home, similar to what Levy had done in Vila N. S. Fátima, with the difference that João did all the manual work himself. In the half-plot (180m²) he built a small condominium with four housing units for rental.

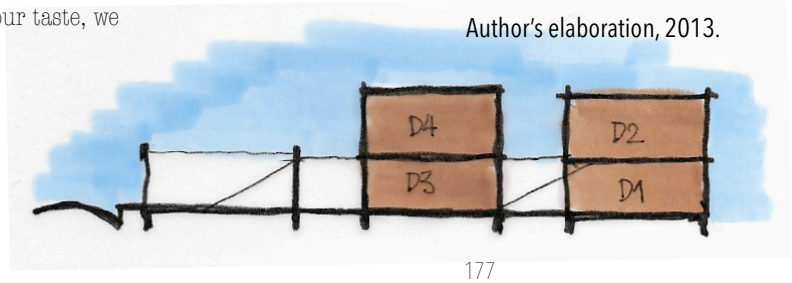
> I did myself. And all that work, to carry sand and concrete upstairs, it is very nice, you have to see it. When you do something for yourself, it is very good, it can be something very simple. And then we stayed here. And after God blessed us with this here and from now on, I am... No, everything we do, like I told you, me and my wife, we do the plan very nicely, the painting, the tiles, then we did all in our taste, we thought a lot (João, São Joaquim).



João's home - top view.
Author's elaboration, 2013.

Two half-plots side-by-side. João's on the left side and Eduardo's on the right side - top-view. Author's elaboration, 2013.

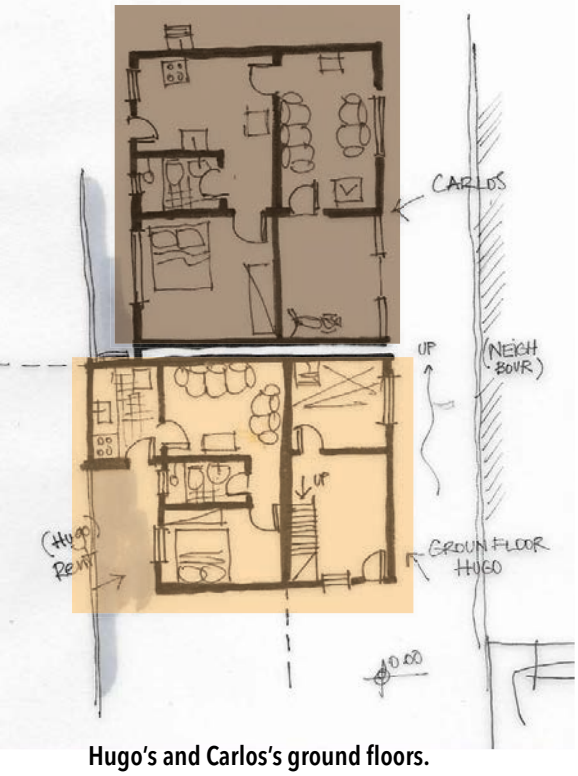
João's condominium - section
Author's elaboration, 2013.



Cluster Jardim Canada - top-view.
Author's elaboration, 2013.

First of all, in 2002, he built the dwelling (D1) at the back part of the plot, followed by the dwelling on top (D2). Afterwards, he built the dwelling D3 and finally, the dwelling (D4), which he started in 2013. So, in eleven years, he managed to build four housing units by himself, working during weekends, on his vacation time and on any other free time he had. As soon as he finished the first dwelling, João rented it immediately, as Levy had done, in order to invest the money in the construction of the next dwelling. In 2013, he had three dwellings rented. The fourth, still under construction, was scheduled to be completed in 2014.

Hugo's building process, repeated with his siblings, presents many similarities to that of all the other informants. After purchasing the plot, he soon started building a small embryo to move into so that he could stop paying rent. He began by building a ground floor with two bedrooms, a bathroom, a living room, and an improvised kitchen.



Hugo's and Carlos's ground floors.
Hugo=orange, Carlos=brown.
Author's elaboration, 2013.

Hugo's idea was first to do only the minimum necessary for the survival of his wife and four children, as his ultimate objective was to move to the upper floor as soon as possible. Unfortunately, this happened only seven years later because of the time they needed to build the upper floor, with the same internal divisions as downstairs. As they moved to the upper floor in 2012, they transformed part of the ground floor into a small and independent housing unit for rent. Since then, the rental of this small apartment has been an extra income source, all of which has been invested in the still unfinished building site.

The next step was to finish the downstairs, assembling a new kitchen, a living room and a bedroom for the boy.

> When we bought here, each one bought and started building to go out of paying rent. And then everybody started. (...) And then Lucia started first... (...) Then Luciana, then me... (...) At last, Carlos. (...) But everybody started practically together.

> I dug all the holes for this house. (...) With the help of others (...) They came and said: "it's like this and this." (...) I asked the bricklayer to mark, he did the circle on the floor, I dug.
>
> I was used to heavy work. This is for me nothing. Things I used to do in the farm (Hugo, Jardim Canadá).

In 2006 Hugo's brother, Carlos, started building a small embryo with only one room, kitchen and bathroom. After two years he started improving the embryo, painting, installing tiles on the floor and on the walls of the bathroom, and building another room and porch, which took another two years.

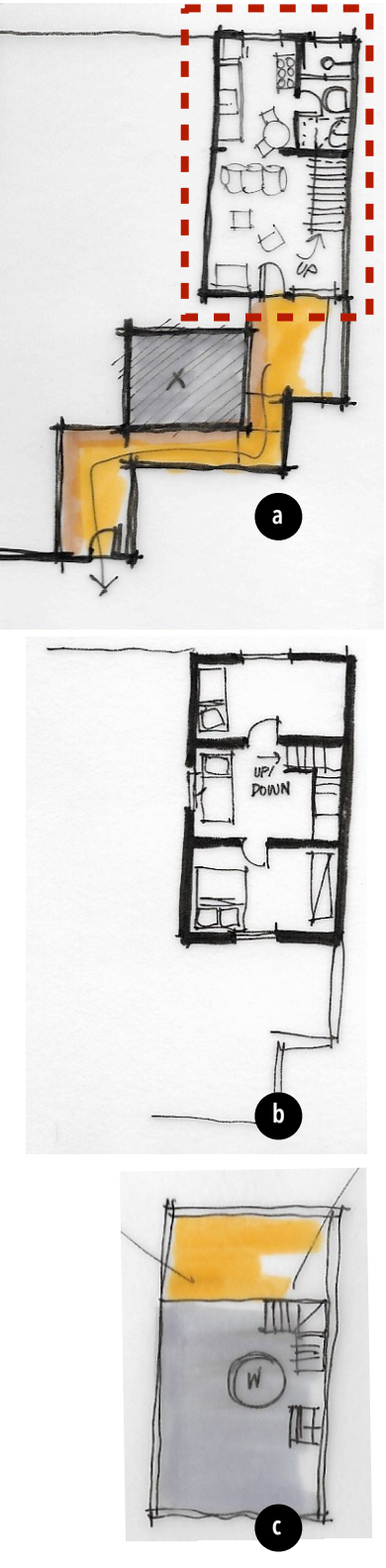
Rosa's dwelling - ground floor. Author's elaboration, 2013.

Carlos and his son continued living under such conditions at least until 2013. They planned to make internal changes to the house in the coming year. The idea was to transform the current entrance hall into a bedroom for Carlos' son, as they have lived together since the boy was born. This change would require the relocation of some doors and windows. Carlos also wished to assemble the kitchen in a nice way. He already bought all the building materials for the next stage of the construction process. He said he had more than R$3,000 (almost €750) in building materials and equipment for the kitchen.

Unlike her brothers, who chipped in on the purchase of a plot with their savings, Rosa took out a loan to buy hers. She and her ex-husband started building Rosa's house in 2007. This case also differs from the others because they did not build a smaller embryo in the beginning. With nothing but courage and determination, the couple decided to build all at once. This decision was not one of choice, but rather the only possibility to shelter their six children, given their economic circumstances. They had to find a way to stop paying rent, since the family had spent all their savings on buying the plot and they still needed to pay off the debt to Rosa's employer, who had lent them part of the money.

Nivea's condominium. a - top view and b - section. Author's elaboration, 2013.

As of 2013, the house still had only two rooms. Some of the children were sleeping in the living room, and the kitchen still had no finishings. Rosa dreams of building on the second floor, to provide more space and comfort for her children.



Carlota's dwelling. a - ground floor, b - upper floor and c - roof top. Author's elaboration, 2013.

Nivea lives with her husband and her sons in one of the seven dwellings built on a hilly 360m² plot in Pindorama. It is again an informal condominium, since the units are independent. Because of the inclination of the plot, each dwelling is built on one level of the terrain. In this case, all the residents are siblings who have lived there almost all their lives.

The first embryo was built by Nivea's father in 1975, where today the dwelling D4 is approximately located. At that time, he built himself not only one, but two housing units, in order to rent the second one and then to receive extra income to invest in his own building site.

Each son or daughter produced their own dwellings over time on the same plot. Nivea and her family occupy the latest self-produced dwelling (D1). She started to build a new kitchen on the second floor, since she also works producing snacks and catering.

After one year of living in a wooden hut (grey spot), Carlota and her husband bought a small piece of irregular land of approximately 35m² (estimated by the red line). In the same year they started building a single room with a toilet and kitchen, without finishings or windows. They continued living under such conditions until 2005, when they finished assembling a pre-fabricated brick slab on the second floor and installed windows. After yearly renovations and improvements, the house is very well-equipped and comfortable.

Carlota and her husband have three bedrooms, a living room integrated with a kitchen, a bathroom and laundry, distributed over two floors, and a rooftop. The laundry is located on the rooftop, where they have a beautiful view of the neighbourhood.

This short introduction to *battlers*' self-production processes gives us a general idea of *battlers*' self-production. Through graphics, tables and photos related to each case study (see Appendix, pages 291-318), we can observe an increase in construction processes among these case studies, confirming that *battlers'* economic gains have played a role in self-production during the first decade of the 2000s. The next section will present **how** those processes took place.

3 Data Systematisation

> Social space works (along with its concept) as a tool for the analysis of society. To accept this much is at once to eliminate the simplistic model of a one-to-one or "punctual" correspondence between social actions and social locations, between spatial functions and spatial forms. Precisely because of its crudeness, however, this "structural" schema continues to haunt for consciousness and knowledge (savoir) (Lefebvre, 2011, p. 34)

Recalling Lefebvre (2011), social practices of a society are revealed by deciphering its space. According to Lefebvre, spatial practices under neocapitalism include the association between everyday reality and suburban reality. In this context, "the specific spatial competence and performance of every society member can only be evaluated empirically" (2011, p. 38). Inspired by these assumptions, spatial practices from *battler* self-producers are the object of an empirical study, as proposed in this research.

As previously explained, the idea of having a research approach based on empirical experiences is to have the field as the main source of information and knowledge about a relatively ignored topic - the self-production of dwellings in Brazilian peripheries, which have provided housing for millions of precarious urban workers. Based on the need of deciphering spatial practices of Brazilian *battlers* and their social space, the research part which followed the fieldwork was the decoding and the systematisation of the information received in the field.

For that, I have developed and used simple techniques which have facilitated and improved this decipherment, and also to make sure that the interviews were well explored to their limit. It would not be worthwhile to have such great experiences in field and not be able to properly extract the contents of each conversation. As mentioned above, unstructured interviews allowed the informants to speak freely, without any preordained sequence. As a result, the real contents of the people's narratives are not obvious. The sequence of the discussions reflects the logic of the informants' thoughts, not a predetermined check-list on a questionnaire with predictable answers. Therefore, it was necessary to take some time and attention to look at the details inside informants' responses, and to analyse them in the context of each local situation, connected with the socioeconomic context on a broader level. The idea was not to confirm or to contradict the informants' stories, but simply to try to gather the maximum of details, while also respecting the informants' limitations and wishes.

In total, during four months of field work (March, August, September and November 2013), 45 visits to self-produced constructions (see table *"Control of sources in field",* page 318), including 32 dwellings and two small local enterprises, yielded more than one thousand photos and one hundred videos, besides an untold number of notes and sketches. From 34 samples,15 were selected to be analysed in detail as case studies.

The systematisation of the information received in the field took place through seven stages.

1 General review on interview processes

Just after each visit, I proceeded with a critical overview on the complete material obtained from the visit. After each meeting, I listened to audio recordings, watched all the videos, checked all the photos and drawings, and read all the notes that I made in the field. If I noticed that some information was missing, or that there was some kind of gap in the sequence of building, for example, I immediately sought the missing information through a telephone call or scheduling a second visit when the informant was open to that. Afterwards, I noted important observations about the given sample, especially if I thought it would be interesting as a case study or had some other peculiar aspect. If some specific photo or video record caught my attention for some reason, for example to illustrate an interesting situation, I included them in a separate file. Everything produced after each visit was used as research source.

2 Selection of case studies

I interrupted the search for new samples once their characteristics started to repeat. As this was a small-scale research project, complete examinations and analyses of 34 samples would be not feasible. The idea was then to select the most interesting examples, which could demonstrate typical socioeconomic conditions of Brazilian *battlers* who have self-produced their homes. They would be then the case studies that best illustrate the discussions proposed by this research, by means of a close and critical analysis of the self-production processes they employed. From 35 samples, 15 were selected, corresponding to 13 dwelling units and two local housing enterprises.

The samples that belonged to a same neighbourhood configure a cluster. Those samples were the first to be selected as case studies. As presented in Part III, 2 Case Studies (page 137), we have three clusters with 13 case studies in total, located in three different neighbourhoods from Belo Horizonte's

Metropolitan Region: five in Vila N. S. Fátima (Belo Horizonte), five in São Joaquim (Contagem) and three Jardim Canadá (Nova Lima). Beyond their own aspects of self-production, they allowed me to observe the relationships among neighbours and the *battlers'* relationships with the city. All those connections influence, and are influenced by, socioeconomic rise mechanisms and play an important role in self-production.

Although located close to each other, most of the case studies from clusters are not side-by-side neighbours. Even so, I decided to define them as clusters, because their similarities go beyond territorial delimitations that separate one from the other. At the same time, self-production processes in dwellings which are not juxtaposed can equally, but indirectly, interfere in each other. Despite being physically separated from other neighbours (who did not take part in the research), or because they are located on the other side of the street, their relationships deserve to be analysed as a unified group.

In addition, two more samples were selected as case studies, at Vila Monte São José and at Pindorama, as explained in Part III, 2 Case Studies. These two single cases were chosen because they are very expressive and present typical aspects, social and physical, which define their informants as *battlers* and their spatial practices as part of self-production processes. These two single cases also demonstrate how widespread this type of housing production is.

Summary of case studies, location, informants and status of building process

Neighbourhood, Location	Case study, identified by informants' names	Status of the building process
Vila N. S. Fátima, Belo Horizonte	Flavia	Ongoing
	Cintia	Ongoing
	Levy	Ongoing
	Louis	Ongoing
	Nely	Interrupted for short time
Vila Monte São José, Belo Horizonte	Carlota	Interrupted, with plans to go on
São Joaquim, Contagem	Oliver	Ongoing
	Eduardo	Ongoing
	Renata	Ongoing
	João (home / flats)	Ongoing / Ready
Jardim Canadá, Nova Lima	Hugo	Interrupted, with plans to go on
	Carlos	Interrupted, with plans to go on
	Rosa	Interrupted, with plans to go on
Pindorama, Belo Horizonte	Nivea	Ongoing

3 Decoding audio files - Transcriptions

From the types of media used to collect information in the field, audio recordings were the most significant, since they contained people's full speeches without interpretations from the researcher, an interference that can occur with annotations. I used *transcriptions* of the interviews as the main decoding method.

Transcriptions are time-consuming, but a vital part of oral history interview methods. I decided to fully transcribe the interviews in order to preserve the complete discussion, as recommended by Leavy (2011). I also transcribed the audio contents from some videos when necessary. This method is also interesting because many transcriptions could be directly used in the body of the text, as accurate illustrations of informants' ideas, using them as primary references. Many passages were included in this thesis, but had to be translated into English, since people spoke to me in Portuguese, their mother tongue. Literal transcriptions are important to protect raw information from interferences by researchers. Moreover, they present a great practical advantage, since we all use word processors to work. The researcher can use search tools to access specific data to recall events and any relevant information provided by informants, while at the same time working on the contents of the fieldwork for further analysis.

In the beginning of the fieldwork, I intended to work with *reported speeches,* instead of transcriptions, because they seem to be faster and are also capable of providing trustworthy information. Reported speeches are made when informants' words are reported in subordinate clauses using a reporting verb, with the correct changes of person and tense. I started using this technique with some informants from Vila N. S. Fátima, the first cluster that I started to decode. The problem with this technique is that, in reported speeches, the researcher inadvertently acts as a middleman between the literal voice of the speakers and his/her own perception of what people are saying. This creates not only a high risk of misinterpretation, but also can result in an excess of interferences, many of them false.

To guard against this, during the fieldwork and while doing the subsequent transcribing, I was careful to write down my own impressions and observations separately. The idea was to avoid contaminating the work with preconceptions from my side, both as an architect and as a person. In the following page we can observe part of a transcription of one of the interviews I made with Renata, a resident of São Joaquim, translated to English. This transcription presents the initial part of my interview with Renata:

R: I came to here in the year of 1982. Already 30 years. When I begun to build here, it was always gradually. We used to buy the "ground floor" at the city hall. ("ground floor": design of the ground floor, the project of the house; "city hall": municipality, the institution responsible for providing housing solutions for the lower income population.) Then I bought the project at the city and then we started to build exactly like the drawing and then came the engineer, he checked but then I did not like, I found it not so nice. Then I begun to renovate. We spent building materials - doing here, undoing there, doing here, undoing there - and then my sister has a sister-in-law that was an architect and she arranged the house like this for me. At this time, I used to produce sausages and she planned here to be the little factory, understand? I used to produce it there with my father, in a bigger balcony, but then afterwards my husband got sick. He got a multiple sclerosis and then everything got complicated. I got sick too, I stayed two months at the hospital and then his disease really came. He was sick with multiple sclerosis for eleven years and then everything changed completely. But then I moved out and at that time the tiles of the floor were not yet installed and he had to use a wheel chair and then I moved out to the house where my daughter was born and came back here, after the tiles were installed.

P: but, wait. When you bought the drawing from the municipality, you had built the house but had not installed the tiles on the floor yet? How was it?

R: I did not installed the tiles on the floor.

P: You installed no tiles, nothing?

R: Almost nothing, but I moved in. I was very poor, I had to move in, we had to go out of renting. We came without windows, with almost nothing inside.

P: This in 83?

R: In 83. I came with the bathroom ready. And then came the man (the engineer of the municipality) to check. Nothing was ready, but he came to confirm if I had built like the drawing or similar to it.

Part of interview transcription. P=Researcher and R= Renata. Author's files, 2014.

4 Categories of Analysis

Each transcription was then "threshed" for detailed information. Their contents were classified according to the most recurrent topics which appeared in the interviews, which became the investigation categories for each case study. This categorisation emerged from the informants' voices themselves, and was not imposed by the researcher. Besides, these categories have the role of addressing the critical analysis of the research. My job was to identify the different topics people spoke about and to classify them. The objective was to make the analysis more structured and clearer for the reader.

It is important to note that the case studies are not exactly the same in quantity or depth of information, as each informant was more or less open during the interview process. I tried to let the informants be as

free as possible, not only when they enjoyed telling their stories, but also when they were more reserved. In any case, the volume of information which could be extracted from people's responses, and from my observations *in loco,* confirmed that unstructured interviews were an extremely rich source of raw information, demonstrated by the following categories of investigation:

GENERAL TOPICS	BATTLER'S SPEECH
Building	Cintia decided to transfer the manpower from downstairs to upstairs, to finish the walls and to assemble the slab to cover the apartment (upstairs) than to continue building her new home. It is very important for her to cover the apartment from upstairs before the summer rains, which can begin in November, December. The idea is to protect the new apartment with the new slab, avoiding infiltrations.
Building	The plan is to finish walls and slab from the upper floor and to come back to downstairs, to her new house. She intends to plaster the upper walls only in the next year.
Building	Building materials are stored in the grocery shop.
Building	She re-used old windows, before installed in the grocery shop. The windows look new, she re-painted them. She said the windows are 25 years-old. She believes building materials from old times last more than the one nowadays produced.
Building	The idea is to finish everything in the apartment downstairs. The does not want to move in with things unfinished.
Building	To be faster she chose not to plaster the walls with fine mass or gypsum, only to plaster them, to sand them, to protect them with a "*selador*" and to paint them. She has not yet bought the finishing materials.
Building	The stairs will be finished only after finishing the apartment downstairs.
Building	She intends to install a gutter to avoid that the water falls in the plot of the neighbours.
Collaboration among family members	Sometimes her father sells one or two cows and gives her the money to invest in the construction. She says: "it is all ours!"
Collaboration among family members	Her father says that with his cattle he earns around R$1500, which he shares with the caretaker. From this amount, he lives and gives the rest to Cintia.
Decision making	They decided to start building (in March) because the old roof, that was there for 30 years, was too old, and some water was coming inside. At that time, it happened that Gilson, the bricklayer, left his job and was unemployed.
Duration	She believes in November everything is ready for the apartment upstairs.
Duration	She begun the building process in March.
Manpower's conditions	Gilson, the bricklayer, had to stop his work for about one week because he got sick. He had an ulcera in the stomach. Cintia said that he almost died, but fortunately he did not have to do a surgery, just to take medicaments and to stop drinking. Cintia says he drinks too much - "all bricklayers drink. The same way they work, they drink."
Manpower's conditions	Cintia is very happy with the work of Gilson. She says he is a professional bricklayer.
Manpower's conditions	The bricklayer found out he was sick because he felt dizzy. He had a hemorrhage and lost a lot of blood. After staying five days at the hospital and two days of rest he is back to work.
Manpower's conditions	From one week to another, Cintia combined the work with Gilson, bought the materials and he started working for her.
Money managing	Since March everything they earn they spent, without making any savings. Before they had savings, which they spent almost all. There is still some for some emergency in the family. They do not save but they do not own.
Money managing	They did not take any loan, but buy all materials with the credit card. The only use of credit card is to buy building materials. When they do not have cash, they use the card.
Pause in the process	They have to stop the building process because the bricklayer got sick, had ulcera and almost died.
Relation with the neighborhood	A neighbour called her attention about Gilson. He was unemployed and this neighbour gave her the idea to invite him to work.

Classification of investigation topics. Author's files, 2014.

5 JUXTAPOSING

After having the contents of each interview "threshed" - separated or classified - among categories of analysis, I decided to place investigation categories of informants from the same cluster side-by-side, in order to obtain a horizontal overview of the cluster, regarding this or that category of analysis. Afterwards, I introduced the categories from the two single case studies. With this method, I could have an overview of each category of analysis, independently of their original household.

	Hugo		Carlos		Rosa	
	Informant told...	**Observations**	**Informant told...**	**Observations**	**Informant told...**	**Observations**
Collaboration practices	*And I had a sister who came here for three months, but this neighbourhood was very small, 15 years ago, this neighbourhood had nothing. When I came here, to meet my sister, she had nothing, she went to live in a room of 2m and something. She had no bed, nothing. Even though she told me I could come and to stay with her.* Absolutely. With manpower mainly. Friends mainly. Were the first to arrive and say, let's do it.	I asked if they helped each other because they have started practically together.	*I used to live with my brother more than one year. And then I was single at that time and I thought: "I will live alone", because sometimes you want to bring someone to your place, and you bother. No, I like to live alone. I found it better.* *At that time the people who helped me in the two rooms and the bathroom was the people of the neo-charismatic church.* *I am a catholic. But people, we are good friends. When they assembled their slabs there, they called me, and I am like that, if I say I go, I go. But always tell I go. I never say I don't go. I am a too simple person. I never say I can not. I always say I can. Even if I go there just to help a bit and so. I always say I can. To motivate people you know? Like when I run at the square, people pass by me, let's go! Life is like that, let's go together, let's go, let's go! But it was very hard, you know?* *(...) who built here for me was a friend of mine and he always brought the good for me.*	The same bricklayer is going to finish the house. The same one who helped him for free.	*P: And who helped here, to work? Did you work in the site?* *R: No, I had to work right? At that time. Actually there was one guy, I forgot his name now, he helped here as manpower. He worked and did not charge. Ah, we had a lot of help. Windows, the boss of my ex-husband, he gave us. But we had a bit of help, we did, understand? To assemble the slab, we got help. We earned the slab.* *Oh God, I own him a lot. Thanks to him. Without him, I would be even more fucked up.* *P: Then he came and you rented the hut. Your two stayed there.* *R: And soon after came the rest. One each time. And then all came. The first one to come was me. But I was in really trouble, oh...*	

Example of cluster's horizontal overview, on "Collaboration Practices". Author's files. 2014.

6 Identifying topics for analysis and re-grouping

After reviewing each category of analysis detached from its original household, I regrouped them into a smaller number of more comprehensive categories. From 28 visits over 15 case studies' spots, I identified information on 25 investigation topics, each one a category of analysis, as demonstrated by the table A. Same colours indicate complementary topics, which were then (table B) regrouped into broader categories. Those last ones drove the definitive items of analysis, which are included in Part IIII of this thesis - 4.1 Acquisitions, 4.2 Building Overtime, 4.3 Manpower and Know-how, 4.4 Space and Creative Power and 4.5 Technical Complications and Building Materials.

A

	Original threshing
***Battlers* as individuals**	Collaboration family members
	Conflicts
	Educational/professional background
	Extra income
	Fears
	History of the family
	Socioeconomic environment
	Working conditions
***Battlers* as self-producers**	Acquisitions
	Building Practices
	Decision Making
	Designing
	Dreams and new ideas
	Duration
	Learning
	Manpower
	Old desires
	Pauses
	Preferences
	Regrets and mistakes
	Spatial aspects
	Technical aspects
***Battlers* as city dwellers**	Relation with the city
	Relation with the neighbourhood
	Urban Regulations

B

	Original threshing	Re-grouping	Definitive items of analysis
***Battlers* as individuals**	Collaboration family members		
	Conflicts	Conflicts	
	Educational/professional background		
	Extra income	Work and Income generation	
	Fears	Fears	
	History of the family		
	Socioeconomic environment	Socioeconomic + familiar environment	
	Working conditions		
***Battlers* as self-producers**	Acquisitions		
	Building Practices		
	Decision Making	Decision-making on purchasing, planning, building	**Purchasing** **Overtime planning and building**
	Designing		
	Dreams and new ideas		
	Duration		
	Learning		
	Manpower		
	Old desires	Manpower and know-how	**Manpower and know-how**
	Pauses		
	Preferences		
	Regrets and mistakes		
	Spatial aspects	Spatial aspects	**Spatial aspects**
	Technical aspects	Technical aspects	**Technical aspects**
***Battlers* as city dwellers**	Relation with the city	Relations with the neighbourhood and the city	
	Relation with the neighbourhood		
	Urban Regulations	Urban Regulations	

Categories of analysis and regrouping.
Author's files, 2016.

In the Regrouping column we can observe that the items "Conflicts", "Fears" and "Urban Regulations" are written in the grey box. The contents of these categories were to be distributed over other categories because they were connected with other primary issues and therefore did not demand an exclusive category for each one of them in Part IIII[11].

7 SKETCHES, PHOTOS

While dealing with audio files and transcriptions, I worked on the elaboration of clean copies of sketches, in order to be able to present a clear understanding of the space of the dwellings and their immediate surroundings, not only for architects, but for any reader.

In this regard, all drawings were redone by hand, without technical codes and patterns. The yellow marks show all sorts of open places, like yards and uncovered verandas. Green marks demonstrate the presence of gardens or bare earth. Names of internal spaces are standardised as K=kitchen, L=Living room, Br= Bathroom, Bd= Bedroom, Dr= Dining room and L= Laundry.

The "Appendix - Quick guide to case studies" provides a quick guide to familiarisation with the case studies of this research. It contains graphics, tables and photos from each case, besides general statistical data produced for the research and some curiosities. Some tables which are placed alongside the text can be also found in this appendix.

[11] Instead of taking part of the final analysis, the grey and rosé items from table A, repeated in table B, ended up being part of the Part III, 2 Case Studies (2.2 Informants as *battlers* and 2.3 Informants as self-producers). The contents of these items are related to general aspects of the informants, which have to do with their socioeconomic conditions and the prior conditions of the self-production processes in which they are engaged.

III

Analytical Discussions

1 Acquisitions

The initial step for typical self-production processes is the acquisition of an empty plot or of an existing house which will be modified to meet people's needs. From 34 samples visited during the field work, 24 were originally empty plots bought by their owners, who have built their homes and housing units step-by-step over time[1].

The most typical situations in self-production are those in which people buy an empty space and then build according to their financial, spatial and logistic needs. They do this without the assistance of bank loans, using the meagre resources available to them instead. For these people, self-building is preferable to paying rent to live in someone else's house, as expressed repeatedly by the informants for this research. Paying rent for a place to live is generally regarded as a bad investment, as it is expensive, it generates no equity, and it is inherently unstable, depending on the vagaries of the landlord/tenant

[1] As previously explained, they are located in consolidated settlements and in middle-sized subdivisions, which excludes the ones from collective housing, because even though people desire to change internal partitions, and some of them have already tried, residents have received dwellings as ready-made products in social housing projects or in popular enterprises. In both cases, housing units were not designed to be changed. Most of them present building techniques which do not allow demolitions and the relocation of water and sewage piping.

relationship. These factors combine to undermine a family's overall financial stability. Conversely, home ownership tends to promote economic stability, which in turn can make it possible for families to go one step further and achieve a rise in social mobility:

> (...) if A is a homeowner and B is a renter, then the bundle of opportunities for A would be larger and would include the component of financial security; whereas B (being a renter) would have access to secure living but cannot use the house as financial security (due to constraints in the nature of tenure / rightfulness). Thus, the bundle of opportunities for A and B vary proportionately with the extent of ownership. Undoubtedly, maximum opportunities are associated with absolute ownership (Tiwari, Rao and Day, 2016).

When people stop spending money on rent, they start investing in self-producing their own dwelling until the point that the basic unit is ready. As explained in the theoretical part of this thesis, the logic of informally produced houses has an opposite sequence in comparison with the formal housing productive chain. Once the plot or ready dwelling is acquired, self-production begins with the occupation of the land, immediately followed by the building of a provisional housing unit (Bredenoord & van Lindert, 2014). A very common solution people find, which has occurred with most informants in this research, is to build an initial embryo, covered with an improvised roofing or, in some cases, already with a precast slab. These initial embryos start with the establishment of basic structural parts, in which reinforced concrete prevails as structural material. Normally, each embryo has concrete foundations, brick walls and pre-assembled or solid concrete slabs. Some families move in even before installing all the doors and windows. Embryos have a kitchen, a bathroom and one or two single rooms, where all family members sleep, watch TV and pass time together. In most cases, the kitchen and bathroom have ready water and sewage piping installations, but finishings are normally the last step of the building process and are done while people are living inside. Finishings remain incomplete for some months or even years, even in living rooms and bedrooms. For *battler* self-producer families, the most important consideration is to be able to move in quickly, notwithstanding the harsh conditions of the unfinished house. This situation was typical for all the families I have visited, and all of them are still promoting improvements at home. We can imagine how chaotic their everyday lives can be at that stage, although they do not complain at all. Instead, they are proud of having achieved such a great step.

After this first stage, which is normally a big sacrifice for the family, comes the compensation - the security of owning a dwelling. The money that once was spent on rent is used to take the construction to a second stage, where the house offers a little more comfort to the family, but in most cases will be not fully completed. From this stage on, people keep investing in the household, taking good care of their big achievement, like painting the internal spaces of the house more often and planning future changes. Among future changes, it very often happens that the family chooses to build a small shop or flat for rent, as a guarantee of an extra income source. As explained by Turner (1977, p. 85), "the progressive development house is a positively balanced housing economy", where building and maintenance costs are balanced against income, increasing family assets. This logic within the Brazilian socioeconomic context -- the acquisition of plots and dwellings (formal and informal) followed by a self-production process -- is a motor for economic gain, which, as previously explained, does not imply a true social rise.

If the expenses for housing are at some point resolved, since residents do not pay rent anymore and the house is more or less ready at least temporarily, residents can spend their money on different things besides the house. Many invest their saved money in education, affording private schools, or on private cars, so they can go to work without having to cross the city in crowded buses, or in private health insurances. Moreover, people start to purchase all sorts of household appliances, as observed in almost all of the dwellings visited in the fieldwork for this research and confirmed by the *"Pesquisa Nacional por Amostra de Domicílios"*, made by IBGE (2013). The research shows a substantial increase in the purchase of electronic products and household appliances by Brazilian families. From 2006 to 2011 the consumption of TVs, refrigerators and freezers rose 16%, 12% and 20%, respectively. The research also revealed that once people stopped paying rent, they started purchasing different types of food and more clothing than before.

> Because I lived a lot of time by rent and many bad things... like, we spent a lot and lived bad. Why? (...) All taps dropped, rainwater came inside, understand? If it rained, everything went mouldy. It was very bad. We spent a lot and resided very bad. Because today, I achieved this here with no few years, after eight years, I achieved this, I think... I am very satisfied (Hugo, Jardim Canada).

To stop paying rent is the main objective of young families who have started their lives in rented dwellings. The ideal situation is to own a dwelling. I heard not only complaints about high prices, but about the bad conditions of the rental dwellings. Besides being expensive, renting has been shown not to be trustworthy.

Some informants even consider renting to be a mistake:

> And we got married and started paying rent, which was something we did without thinking [about the consequences] (Renata, São Joaquim).

The question then is, how these people, called battlers exactly for being part of a precarious working class, can afford the purchase of a plot and build their dwellings?

More than half of the families I have interviewed in formal subdivisions and in consolidated informal settlements have managed to buy land without any support from outside the household and completely on their own, through an incredible saving capability and exhausting work routines, which includes selling vacation time and working on weekends. This effort has no time for breaks, but continues throughout the building process. But even making such sacrifices, some families were not able to achieve this first step without a kick-start, some kind of support for the initial step towards home ownership. I have identified three kinds of kick-starts to self-production processes among the informants of this research - some small heritage, the possibility of cohabitation in a same house or on the same plot in "half-plots", and affordable or informal models of credit.

Self-builders often choose irregular plots located in *vilas* and *favelas* instead of regular plots in distant neighbourhoods. The realise that it would be easier to get a good job close to downtown and that it would be too difficult to keep their children in school while living in places with little infrastructure. Many have sold small regular plots and bought irregular ones or dwellings in a well-located *favela,* given their easy access to better working opportunities and to schools.

Flavia's mother did exactly that in the early 70s. She has always worked as a housemaid in central neighbourhoods not far from Vila N. S. Fátima, where she has been living since then. This situation

demonstrates how the difference between informal and formal is controversial. Formality is not beneficial if it only entails a piece of paper that does not provide access to jobs, schools, and hospitals.

Besides those who prefer to live as close as possible to the city centre, other urban residents prefer to settle in a distant neighbourhood. Motivated by cheap prices, they expect that the area where they will buy the plot will improve and develop over time. In some cases, they were right. Actually, São Joaquim, Jardim Canadá and Pindorama were very different places thirty years ago, without almost any infrastructure, although there were already regular subdivisions in place.

> We bought the plot first. And at the time we bought here, it was... Here was just a lagoon (Renata, São Joaquim).
>
> I bought this relatively very cheap. After three months [in 2000], they canalised the stream and a supermarket arrived (João, São Joaquim).
>
> When we came to live here, there was no piped water, no asphalt. This street here was a complete hole, cars could arrive only from up there and there was a slope down there, like a hole. It was impossible to pass through. There was no electric light up here. We got light from the street down there. Step by step it was getting better. Water... we could not build a cistern. There was no way to build it. There was no water, only stones. Then the water used to arrive with a distributor truck. That is why we have a reservoir, until today. Everybody has a reservoir, because of the lack of water at that time. (...) The truck came, we had to pay for the water, and filled our reservoir. Like that. There was no asphalt, nothing. Then step-by-step, the urbanisation started. Light, water, sewage. We had no sewage, we had a cesspit (Nivea, Pindorama).
>
> Because when I came to live here, there was nothing. You could count the houses here. There was only bushes and dust. Until now this street remains unpaved. But it was even worse. So, this was a long time ago, when I arrived here (Rosa, Jardim Canadá).

Another alternative to save money for future home ownership is cohabitation. It has proven to be an expedient way of saving, both for homeowners and for those who live with them for a while. We often found big families living in the same house: at Nely's home, seven people were living together - she, her husband, two daughters, two brothers and one nephew. The same was true in Flavia's home, where six people lived together - Flavia's mother, her sister, her two kids and one nephew. These arrangements are beneficial to home owners who are able to decrease their monthly expenses because all the

occupants (except school-age children) contribute to the household expenses. They are equally beneficial for the adult children, nephews, siblings and cousins who share the living quarters with the owners, as they have their separate bedrooms in the house and have fewer expenses than if they lived on their own. In this way, they can save to invest in their own house in the near future. All informants who left the countryside because of the extremely hard lives they were used to, have restarted their lives with some form of cohabitation. Normally the head of the family arrives first, and if things go well, the rest of the family joins him after some time -- possibly including brothers and sisters with their own families. In the beginning the families live together in mutual support. After some time, each family might be able to afford a small piece of land and start building their own embryo hut:

> And I had a sister who came here for three months, but this neighbourhood was very small. Fifteen years ago, this neighbourhood had nothing. When I came here, to meet my sister, she had nothing, she went to live in a room of 2m² and something. She had no bed, nothing. Even though, she told me I could come and to stay with her. I came, and I found a job of as a helper in a building material shop and then I started to work two weeks later (Hugo, Jardim Canadá)

The examples of cohabitation I cited above happen in the same housing unit. Cohabitation may also take place on a larger scale, when people subdivide a plot into smaller parcels, which decreases the purchase costs for each investor. This happens very often in regular plots, because the high prices force dwellers to establish small informal condominiums -- a plot is divided into three (Hugo and Carlos), four (Cintia) or even seven (Nivea) smaller parcels, each one containing one housing unit. Normally those condominiums also include commercial units, such as small shops and bars. In 2013, of 15 case studies, 13 could be considered informal condominiums, with at least two housing units (rented or owned) or one commercial unit in use (a small shop, snack shop or bar), besides the main dwelling. Of the 13 informal condominiums, five were exclusively residential and the other eight were for mixed use.

Number and type of informal condominiums among case studies

Total Case Studies	**15**
Informal condominiums	13
Only residential - beyond informants' home, there is at least one additional housing unit	3
Only residential - informal housing enterprise, self-produced.	2
Mixed Use - beyond informants' home, there is at least a small commercial spot in the same plot or in the same construction	8

The first steps toward home ownership through self-production sometimes take place with the help of informal loans and uncomplicated models of formal credit to purchase the land. As in cohabitation, family members help each other, but this time with loans with minimal or no interest. I also found employers who empowered their employees with information about regulations and public loans, and some who have themselves lent money to their employees.

Rosa used to work as a housemaid and is still grateful to her former employer, a resident of one gated community in the surroundings of Jardim Canadá. The young lady lent Rosa R$2.000 (about €540) without any interest or guarantees. They agreed that Rosa would pay her R$500 (about €135) per month for four months, using part of her monthly income (55%) to satisfy the debt. It was a big discount for Rosa, who earned at that time a little more than R$900 (€240). This situation demonstrates how a small amount of economic resources can make a big difference in a family's life:

> At that time, I was working only for two months at her house. She lent me R$2.000 to close a deal here. Without her we would not have closed it. Because the amount the guy was charging us for the plot was... (...) we had a little, but it was not enough. R$2.000 was missing at that time. Then she lent me. I was working only for six months at her house and she lent me that money. She did not charge me any interest. How did I pay her? At that time, my salary was R$900. I paid her R$500 by month. She did not charge me any interest. Then we closed the deal and started to build. (...) Without her, we could not... (take another loan). The incomes were not enough. You should have a plus income. (Rosa, Jardim Canada)

Micro-credit options aim to do exactly that -- to provide credit to the poor, people who do not fit inside formal bank systems, independently of the final purpose. With small amounts of money people can take a first step in the direction of their financial independence. Unfortunately, in Brazil micro-credit options are very few and not addressed to housing[2].

The cases of Rosa's brothers, Hugo and Carlos, were somewhat different. They did not take a loan to buy the plot. They had some savings, but not enough to buy the small parcel of land. Fortunately, they found a seller who agreed to wait three months to receive the full payment after closing the deal.

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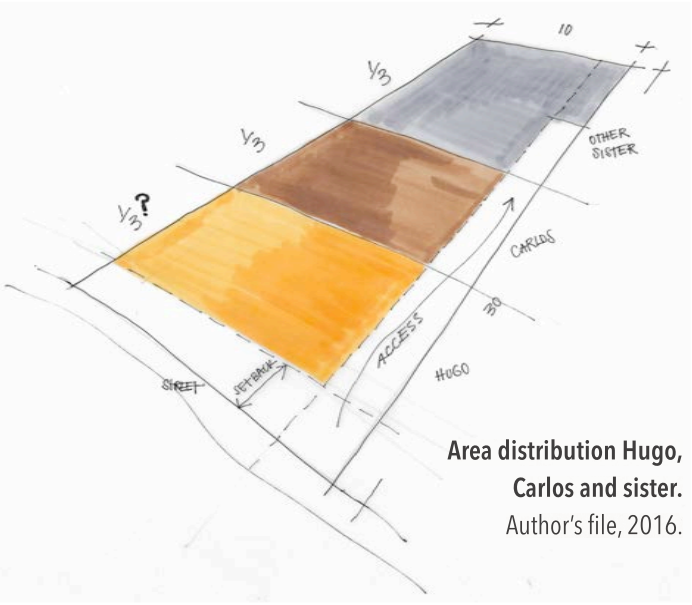
[2] The only option for small credit available for low-income residents is the *Construcard*, addressed to the purchase or building materials, as explained in Part II - Theoretical Background.



Area distribution Hugo, Carlos and sister. Author's file, 2016.

The idea of buying a plot came from Hugo's boss. He discovered an opportunity to purchase a plot of 12m x 30m in the same neighbourhood. The problem was that Hugo's family could not afford the whole amount on their own. Actually, Hugo did not need so much space, nor had he the resources to build a big house to occupy the full plot. At first, he decided to his brother-in-law to share the costs and the space with him. Each one would get 150m^2. But the price was still too high. So, they decided to invite another brother, Carlos, to take part in the negotiations and to share the purchase price -- and the plot's area – in equal thirds. However, there was yet another problem. As this offer was somehow unexpected for Carlos, who did not have his full share of the purchase price at that moment, the family had to negotiate with the owner, offering to pay whatever cash they had (from Hugo and his brother-in-law), and Carlos would pay his part within three months. The seller agreed. It was then decided that Carlos, his brother and his brother-in-law would subdivide the plot - not only the space, but also the purchasing costs. So each resident received a one-third plot, with about 12m x 10m for common access. As there is a setback of approximately 2.5m in the front, I am not sure if the setback was discounted from the 30m before dividing the plot by three. In that case, if the length of the setback were apportioned to each resident, each partition would be 9.30m instead of 10m deep. The other option would be that the first portion, belonging to Hugo, would be a smaller area. This difference did not seem to matter to the residents. On the one hand, I am not sure if they even noticed this difference, and on the other, they might have solved this issue very amicably, since the family seems to be solution-oriented and has a highly developed collaborative sense.

Cellar in Rosa's dwelling. Author's file, 2013.

Rosa's case was more dramatic. She and her ex-husband intended to build a garage first, then afterwards build the house on top of it. The problem is that they had to build everything in a terrible hurry, in order to move in the new house as soon as possible. It was financially impossible for them to pay for the plot (through a loan from her employer), to pay for building materials for

the basics of the new house, and to maintain the rental house at the same time. Then they quickly realised that they would not be able to build the garage first, and then they decided to work only on the house. It was not clear what technically happened, but for some reason they left a cellar unfinished, one which they barely used, and because of that the house was built one-and-a-half meters higher than the street level. Like some other self-producer *battlers*, they wasted time and money by making wrong choices taken in urgency.

> It would be good (...) We could have moved a bit more up, instead of the cellar to have a garage. But we were so much in a hurry, to build that we just saw like - "we have to build to move in, to leave the rent", since we have already bought the plot, right? "We must build to move in!" We just saw that, we only had this in our view. We did not think about anything else (Rosa, Jardim Canadá).

Although the processes of buying and selling are very similar among *battlers,* home ownership is diverse. The informants from informal settlements did not receive ownership titles. although they paid for their plots and the production of their dwellings themselves. In contrast, all informants living in subdivisions have their ownership recognised, since they bought formal lots. The dwellings remain irregular, since none of them has received approval of the construction of their dwellings from the municipality.

In the table *Data on building processes*, Appendix - pages 305-309, we can check when each building process has started -- from 15 selected case studies, four initiated their building processes in the 70s, three in the 80s, two in the 90s, and six in the aughts. We can also identify which kind of economic support was received in the beginning and if the family counted on some type of loan. A brief history of how the beginning of the process happened for each family is also described, together with an indication of those which are informal condominiums, which ones were built on regular or irregular plots, in addition to the information as to whether they were part of shared plots.

2 BUILDING OVERTIME

> They imply a stage-wise building process, realised by individual families, only if and when their financial situation allows them to take further steps in the building process. This approach has the advantage of excluding the risks of long-term financial obligations in the form of mortgages. On the other hand, it means that the entire process of finishing a self-built house may take a long time (Bredenoord & van Lindert, 2014).

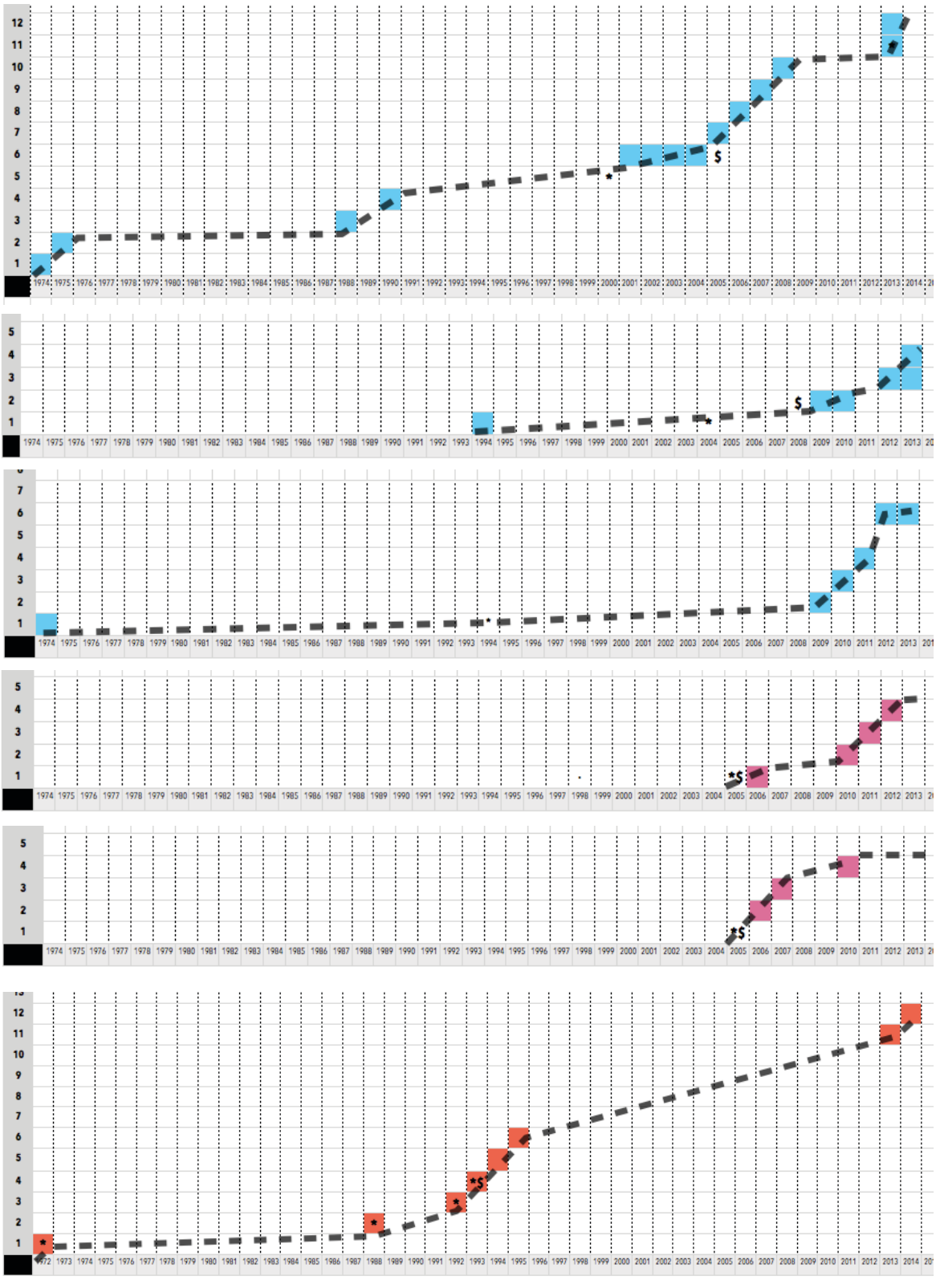
As the rise of new working classes is a worldwide phenomenon, so too is self-production. People have built their own houses since time immemorial. In the context of Brazilian self-production, building overtime is a current aspect, as also noted by Habraken when he visited low-income communities in Bosnia and Croatia: "… In one year, a floor was built; perhaps another followed several years later, with money earned by labour in Germany or Italy" (Habraken, 2000, p. xviii). He suggests that the ordinary-built environment comprises not only physical forms but also the people acting on them through their labour, which innately happen along some time.

As we can see in the table *Data on building processes* (pages 305-309), I have found self-production situations that started in the 70s and that were still ongoing in 2013. People operate in such a way that before finishing a given task, a new task is already demanding attention: "there is always something to be done". Those processes, which started long ago and might last decades, are not continuous, however. Along the way many pauses have to be taken, according to people's ability to gather resources, along with all sorts of other reasons.

> (...) we started and... there was the money for the bricklayer, the money for the material, there are other expenses, so, you had to associate everything. Comparing with what it was before, like... (...) That's why we did it slowly. Why? Because I always told her: "We are not gonna do things on a hurry." Because she always complained: "We are living in this rubbish!" She was right. But I always told her we cannot do everything at once, because you buy bad tiles, install them. From then to one year, you have to change it, it is more manpower (Hugo, Jardim Canada).

The graphics on pages 291-304 in the appendix demonstrate the rhythm of building overtime for each case study.

The curves were obtained using all actions on self-production reported by informants (indicated by coloured cells), including loans (indicated by a "$") and the purchase of plots or real state (indicated by a "*"), distributed along a timeline that began with the arrival of that family or informant at each location. Some of the graphics are presented below.



Building overtime - Flavia, Levy, Cintia, Hugo, Carlos and Eduardo. The numbers (Y) are the sequence of self-building actions, while in (X) we have a time line, started in the 70's until 2013. Author's elaboration, 2014.

When we analyse the curves of self-production processes for each one of the 15 case studies, we confirm that in many cases a steep upward curve appears up to the second half of the years 2000 to 2010, culminating at the end of the decade.

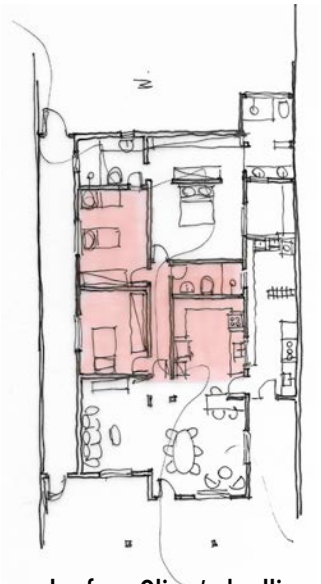
This confirms that a continuous sequence of self-production activity took place during the period known as the time of the rise of the Brazilian new middle class, marked by the increase of regular job offers, valorisation of the minimum wage, increased purchasing power of the poor, and the amplification of governmental programmes devoted to income transference to the poor. The 80s appear as a time of stagnation, reflective of the Brazilian economy at that time. Nevertheless, we can observe that the purchase of land or of ready dwellings happened relatively independently from the general ongoing context, influenced more by personal stories and circumstances, as demonstrated by the conditions of acquisition described in the previous section. As we have seen, some informants received support from their employers to make the first step towards ownership. As confirmed by the table *Informants' Socioeconomic Aspects* on pages 315-317 of the appendix, all informants except one were regularly employed in 2013.

The curves also give us an idea of how long self-production processes can last. We could think that each event marked in the graphic represents one single event, independent from the other ones. The interviews prove the opposite. Those events, although interrupted by long breaks, are part of a whole idea, a big dream for most families, who have postponed its completion because of the adversities of life. That is why plans can change over time and affect the plans for the dwelling. In any case, interferences are a fundamental part of self-production processes. They reflect how people's lives change along with their capacity to react to diverse circumstances. Graphics confirm that processes have a clear start, the purchase of regular or irregular land, but their end remains uncertain. At the time of the fieldwork in 2013, none of the informants said that they would have reached their objectives yet, although they were all quite satisfied. In all cases, ownership had already played a fundamental role.

Although having achieved relative working stability by 2013, *battlers* did not feel secure about making large financial commitments in advance. First of all, there is a pervasive feeling that

"everything can change", which is still present even after two decades of economic stabilisation[3]. Brazil went through three decades of high inflation and extreme economic disorganisation. For many, the glorious first decade of the 2000s, reflected in the generation of more than 15 million new job positions between 2003 and 2010 (a growth rate of 53% in relation to the previous period), was their first encounter with some sort of economic stability (Portal Brasil, 2011).

Secondly, *battlers* simply do not have enough resources to build their dwellings all at once. Low-income residents cannot afford the option of bank loans for the construction of one-family houses. The only option available to them is the *Construcard*, which is earmarked for the acquisition of building materials. According to the fieldwork, the start of the building process can be considered the harshest moment of the entire process. After purchasing a plot, people have just spent their life savings, when they had anything saved. Many just have the courage to take an informal loan, using a large chunk of their salaries to pay back the debt, while facing all sorts of restrictions in their everyday lives. As the main objective is to stop paying rent, *battlers* need to start building immediately and move in, despite having almost no resources to go forward.



Floor plan from Oliver's dwelling.
The area in rosé represents the original embryo of Oliver's house, built in 1980. Author's elaboration, 2017.

Thus, many dwellers end up building an embryo - made of a wooden or concrete structure, using piled ceramic bricks for a stove on a rough floor - without any economic support from outside their household, but with their own resources. This small dwelling is built in two or three months, when the family moves in, with no tiles or painting and sometimes even without windows. People remain resilient living under such conditions, knowing that it is temporary. The embryo slowly starts to be improved day-by-day by building a real kitchen or installing one window in the toilet. Sometime later, residents add more rooms until the point where they start recognising their hut as a house. And from this moment, many renovations and improvements will keep taking place, demanded by changes in the family structure and its new needs.

[3] Curiously, writing this thesis in 2017, yes, everything has changed in Brazil in relation to the decrease of social inequality. Because of a serious political crisis, however, the country seems to be moving in the opposite direction from that of the first decade of the 2000s.

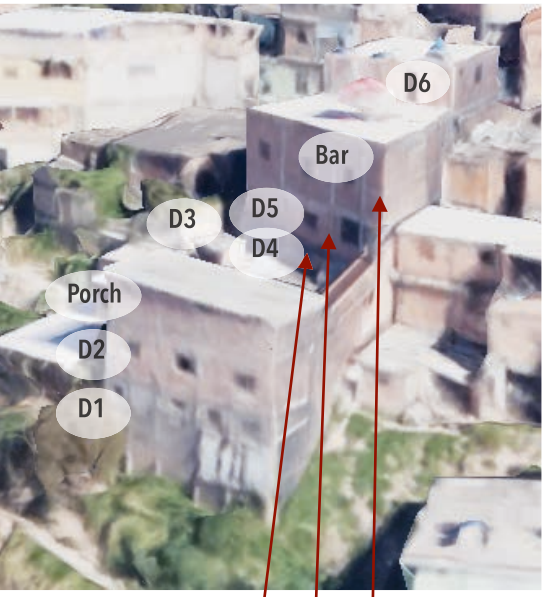
> There was the wooden hut. Right, two rooms, one bathroom, we had two small little rooms, one little bathroom and we were five people, because there is my nephew living with us, since he is nine, he came to live with us. So, we were five people living together (Carlota, Vila Monte São José).

To understand *overtime* building processes, we have to be aware of some differences. First of all, we have to distinguish plans from projects. Many experts from the construction field see self-production as a disorganised and chaotic practice, just because it has no technical plans. Although people cannot afford projects, they still make clear and very logical plans, according to their realities. Those plans do not require sheets and sheets of paper as architectural projects or engineering tables. They are more than DIN formats, because they are not separate from family's finances. On the contrary, they are a unique thing. They are building steps according to personal needs and preferences at the same time, an understanding and a practice that makes building feasible. In *overtime* building processes, dwellings are not understood as finished products. The typical stages of a heteronomous mode of housing production - fundaments, preliminary planning, development, executive plans, approval, commissioning, construction and construction inspection - make absolutely no sense in self-production. As mentioned in the introduction, this difference between two different *modus operandi* -- the unidirectional and heteronomous construction and the self-production -- is what makes, for example, architects so distant from self-producers. Even without formal projects, people do make plans. They might be not designed with 3-D models or managed through sophisticated software not accessible by lay people, but the truth is that people are keenly aware of their demands and exactly what they need to meet them. Adequate resources fail, but this does not prevent self-producers from trying. The logistics strategically developed by *battlers* in self-production are, in any case, remarkable.

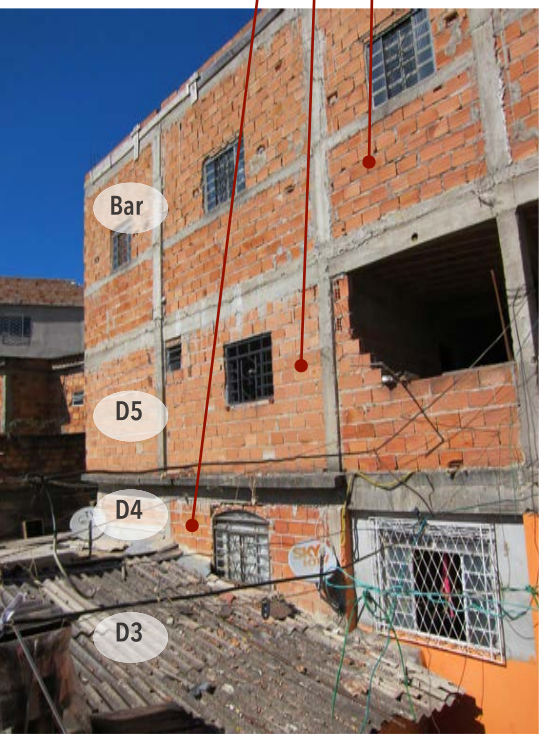
> I did it very correct to see if it would fit, I measured if the wide would be enough in the corridor, because you have to leave space to pass a refrigerator, the furniture, it was everything like that, somehow calculated (João, São Joaquim).

Eduardo built his first dwelling at the back of his half-plot. At that time, he had no idea about building other housing units or shops, so that his current situation has nothing to do with this intentions in the beginning, although there was always the precondition of having the family's home ready. He started building on the back part of the plot because he was afraid of floods, a common occurrence in São Joaquim at least until 2000. Intuitively, Eduardo thought it would be better to leave empty space in the

front and to start from the back. Nivea's father, from Pindorama, also chose the same strategy of occupying the plot starting from the back in the early 70s.



Cintia's condominium. Google Earth, 2017.



Cintia's condominium - view from behind. Author's file, 2013.

The same strategy was adopted by Cintia's father at Vila N. S. Fátima. There seems to exist an unconscious rule of starting from back to front, especially in plots with very sharp topographies. In Cintia's case, D1 was the first dwelling to be built, located in the bottom down part of the terrain.

Also remarkable, at least for us architects, was the almost complete absence of drawings or a simple disinterest in mentioning them during the interviews. From 35 samples, only Renata, Oliver and Rosa had once contacted architects. In the 80s, Renata asked for some ideas from the sister-in-law of her sister, who was an architect, and Oliver took part in the *Arquitetos da Família*'s group in 2009. Rosa met an architect at her work, although she is not sure if she can count on him for her next ideas. All the informants planned their buildings and improvements without any formal technical assistance. The elaboration of drawings, a central issue for architects and urban planners, plays a secondary role for self-producers. Almost all of them reported not having made drawings before or during the building process. Others have forgotten if they made some kind of sketch, and those few who did make sketches have simply not given any importance to them. I had no access to any drawing made by self-producers, because all of them were discarded.

> You do this wall here and you isolate the bedroom. The bedrooms stay all on one side and you change only a door. I changed the door, changed the place of windows. What did she do? She just changed one wall. One wall changed the house completely (Renata, São Joaquim - about the experience with the architect).

> H: And all here was our idea. There was no engineer, no architect, nobody was here to give some ideas. We exchange our ideas among ourselves and kept doing.

P: And did you draw before? Or was it all in your head?
H: We did.
P: Do you have these drawings?
H: No, we threw them away.
P: And were they the same as you have built?
H: The ground floor, yes. But upstairs we did not draw, we copied from the underground floor (Hugo, Jardim Canadá).

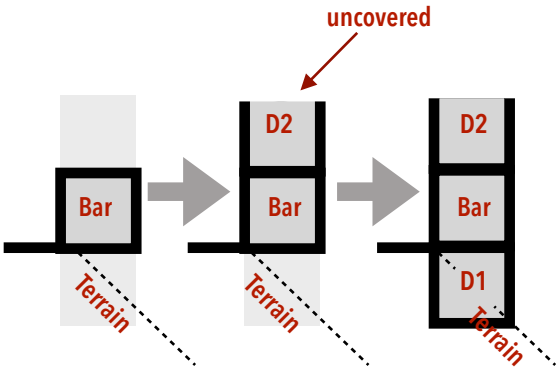
P: Here, did you plan, the rooms, this will be here... that is gonna be there...
R: It was my ex-husband, who did.
P: Did he draw it?
R: He drew it. All here he drew. He drew even on paper.
P: And he built exactly like he drew on paper?
R: Yes, everything the same.
P: And did you like it?
R: Yes... I am thinking about to call someone so, who I know (...) I think he does not work there anymore. He would come and check, the stairs there (...) But now he is not working there anymore. I am thinking about calling someone else...
P: And this person you would call, who is he/her?
R: From my work. He is an architect. He works as an architect.
P: And now that he has left? Who are you going to call?
R: This is what I am thinking. He has already said that the stairs should be in the middle. Now the rooms upstairs I don't know. Because upstairs it will be so, I will build three bedrooms and I will have to use here and a part of that area to build a living room and a kitchen together (...) If I have to divide like here, it will be small the same way. And I will move a bit to the front and integrate the living room and kitchen (Rosa, Jardim Canadá).

It is also important to distinguish phases from interruptions over the building process. One situation is when a building process is divided into many small steps, one after another, from start to finish. Each phase would complement each other, but there would be nothing interrupted, in the sense of being left unfinished. A different situation arises, however, when there is a whole construction process going on, which is broken and interrupted for an uncertain length of time and the tasks remain undone. This is what most commonly happens among self-producers.

Uncovered concrete slab waiting for the next floor.
Author's file, 2013.

Together with a general lack of know-how, both conventional construction techniques and the most common (and cheap) building materials are produced using the methods of the formal construction industry, and not for a building process which happens in steps. As a result, instead of complementary phases that happen one at a time, we have an unfinished building, full of unfinished tasks, which in turn will present technical problems, mostly because building materials and construction elements are not suitable for a construction site on which the building is done in phases.

Flavia's family have always lived in unfinished houses. When they decided to build a second floor, the hole for the staircase remained open for about three years until the construction was completed. Afterwards, the second floor remained unfinished for another two years. During all that time they all had to live in tight quarters downstairs. Nevertheless, their lack of comfort is more my observation than a general complaint of theirs. People learn how to accept adversity, to deal with it, and to use it as a motivation to go forward.



Cintia's sequence of building. D2 remains without any covering. Author's file, 2017.

Cintia's strategy was somewhat different. Her idea was to pause the process in the underground floor just before painting. She considered painting to be a very long task and preferred to use the workers to finish the heavy work from the upper floor first -- walls, concrete slabs, electricity, installation of windows and doors. When all rough work was finished, then she would paint the entire condominium. Although Cintia planned everything very well, she had to interrupt the work because her bricklayer got terribly sick from a stomach ulcer and nearly died. Therefore, Cintia decided to build the walls and slab of the ground floor, to build the walls of the upper floor, and then to stop the process, leaving the upper floor uncovered.

On going building site of D2 (Cintia's condominium). Levy's building is on the background, on the other side of the street. Author's file, 2013.

Levy started building his dwelling in 2009 and decided to take a break after finishing part of the first floor. By the end of 2009 he realised he was losing money with the unfinished flats, which he could have rented if they had been finished, and used the money to pay for further construction.

He was also afraid that the brick walls could fall, since he had not yet moulded the concrete beams to close the structure and the area is very windy. He also feared that children could hurt themselves in the building site if he did not block the access to upper floors. The covering slabs remained unprotected for more than a year until he concluded construction of the third floor. Although he rented the first four flats immediately after the basic finishings of the internal space were concluded, he left the precast slabs without protection against rain water. As we can see in the previous picture, the third floor of Levy's construction (in the background) presents a structural frame made of concrete, which is clearly incomplete. Perpendicular beams would be also needed to provide more stability for the frame, especially because of the strong winds typical to that area.

Levy's building at the end of 2013.
Author's file, 2013.

Levy decided to leave all the finishings (tiles, painting, panelling and isolations) from all the common spaces of the building as the last task. At the end of 2013 (about two months after the previous picture), he covered the third and last floor, but still without providing protection against rain water. He rented a pumping machine to bring the concrete upstairs, something unusual for those residents, who until that moment were used to doing all building site tasks by hand.

Interrupted actions which postpone covering often result in damages to the existing concrete slabs. This phenomenon is very common among self-producers who intend to build multiple-storey dwellings. Usually they start living on the ground floor with only the basic internal infrastructure, without finishings and painting, in order to keep investing in the rest of the construction. Then they build the walls of the upper floor, leaving them uncovered, exactly as Flavia, Cintia, Levy, Hugo and João did. So, what very often happens is that slab and walls of the upper floor remain for a long period of time unprotected against rain water, which causes intrusions and mould. The consequence is that by the time people are able to cover the upper floor, the slab and the walls are already damaged and the painting of the bottom part of the slab needs to be redone within a short time. The ceramic bricks of the walls will possibly have accumulated so much water and humidity that plastering and repainting will not survive.

The ideal solution might be to conduct the water out through gutters and to use chemical and physical barriers to block the accumulation of rain water. However, these measures are expensive and technically

inadequate for self-producers, because they can overly increase the thickness and the weight of the slab, which affects the calculation and the compatibility of the ladder steps with the elevation of the floor. Another possible solution would be, instead of building walls on the second floor, to build a structure and to cover the floor, even without division walls, only to keep water from the precast slab. An assembled roof seems to be cheaper and more practical, since it can be disassembled and later reassembled.

The mismatch between the available building materials and construction elements with the *overtime* building can be considered a typical aspect of self-production. It results in huge profits for the building materials industry, since people have to deal with small technical emergencies almost continuously. Interestingly, the building materials industry registered record sales of R$9 bi (€2,4 bi) per month from January 2007 to July 2010 (ABRAMAT & FGV, 2010). It would be extremely beneficial to self-builders if building materials could be adaptable to such conditions. As it now stands, the technical characteristics of most building materials and construction elements available on the market are not consistent with the logistical demands of residents.

In spite of this problem, building overtime presents great advantages for self-producers. From the perspective of people's needs, it is a very smart way of making the enterprise feasible. First of all, building in steps decreases the scale of a building process, which makes it smaller, easier to afford and to administrate. Each step is more realistic for each family. And as soon as one step is completed, people are more motivated to build forward, because they see that they can. Besides, because the scale is small, the risks are smaller – specifically, the risks of losing material, time and money, and of making mistakes. Building in short steps trains people in self-producing, because they have to repeat more or less the same procedures many times. According to Flavia, the strategy of decreasing the scale of the construction process was a conscious choice. She stated that, on the one hand they spent a lot of money on multiple renovations, but on the other, they never had to spend it all at once, because they divided the job into many parts. Similarly, Nely's husband told me that he builds in steps because, by doing it in this way, he can buy materials only in small amounts, thus avoiding incurring large debts. We observe that the fear of incurring high debts is a major factor influencing the decision to build in stages.

In the fieldwork it was possible to identify at least two different models of managing resources and time. It was a common practice of Flavia, Cintia, Levy, Louis and Nely (all informants from Vila N. S.

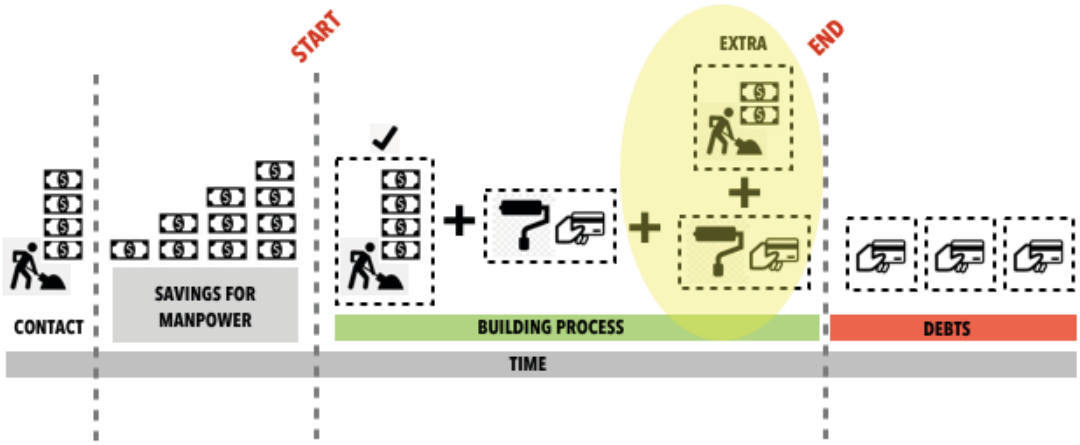
Fátima) and of Hugo and Renata, to save money in order to pay the workers first, and afterwards to pay for building materials relying on the use of a credit card and the possibility of paying off the debt in monthly instalments rather than all at once. In the case of Hugo and Renata, instead of a credit card, they used the *Construcard*, which gives them more or less the same opportunity but with reduced interest. This practice demonstrates why working stability is important, as people depend on their salaries to pay the monthly instalments of the credit card bill. In these cases, the building process normally starts with the search for a bricklayer. After finding the right one, a difficult task in itself, the dwellers make an inquiry about the cost of the service and the material, when the worker can begin, and how much time would be needed to complete the task. With this information, the dwellers can calculate how long it will be necessary to save in order to pay cash for the bricklayer and at least part of the building materials. After having saved the money, they buy the materials, usually at the nearest building materials shop. But extra items are often needed, and by the end of the building phase they have already spent all of their cash, yet still have to continue paying their credit cards. It is somehow exhausting even to think that each phase of a building process happens separately. They hire a bricklayer to build walls, and if the first worker is no longer available, they have to start searching for another one to assemble the slab. And this process repeats over and over.

> We used to save, for example, the money for the bricklayer. Because the bricklayer works one week and wants his money. We got the money for the bricklayer, then we bought the building materials on the credit card or we owned that, and we started paying... (Hugo, Jardim Canadá).

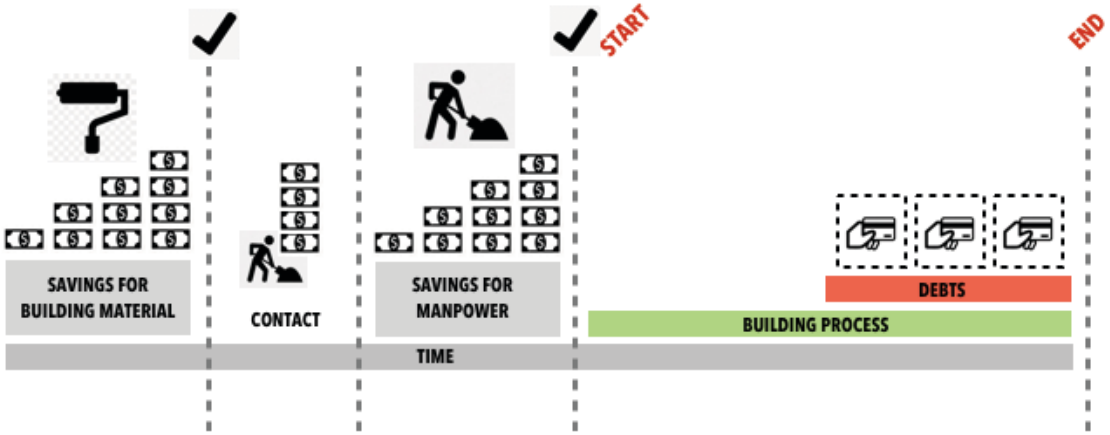
In contrast, Nivea and Carlota prefer to buy all their building materials in cash, regardless of how long it takes to pay for them all, before they begin the building process. They probably wait longer to start building than the informants who adopt the first strategy. While materials are kept stored, people save the money to pay the workers when the process begins.

The first approach seems to be more confusing, since the dwellers have to pay the workers first, even though the work at the building site might not begin immediately. One consideration is that if they wait until the work starts, the worker's price could be higher. Then the dwellers would find themselves having to depend on credit cards. The second approach seems to be safer, since materials are stored while people accumulate savings to pay the workers later. Despite their differences, both strategies are

extreme exhausting, especially when we consider that each time there is a break, the building process has to be restarted, even if it is a small task, like painting or repairing the roof.



First model of resources' management (Flavia, Cintia, Levy, Louis, Nely, Hugo and Renata). Author's elaboration, 2017.



Second model of resources' management (Nivea and Carlota). Author's elaboration, 2017.

> I could pay cash only if I received the 13th salary, but it was everything step-by-step. Nothing at once. Ah, I am gonna a build a house and build all at once. It is not possible. It has to be step-by-step. First, we do the walls, then assemble the slab, then plaster, then you come and buy the tiles, all step-by-step. We used to buy the materials first, paid, then after all, saved the money, kept the material, many times at the shop, and after saved the money for the bricklayer for then after pay. Because our salary is not enough to maintain the expenses and the building site. But if you do it like that, it works (Nivea, Pindorama).

Another advantage of building overtime is that people spend different sums each time, corresponding to each task - for example, painting may cost less than installing windows. These expenses are not obligatory and are not regular, because people choose when to do it. If there is an emergency, such as an accident or an illness, the building process will simply be interrupted.

Similar to the occasional need to suspend the building process, it may suddenly restart because of a coincidental good opportunity, such as a cash indemnity or the availability of a known good bricklayer. Many building site workers work in formal jobs during the week and informally work for *battlers* on weekends. Self-producers like to catch the bricklayers when they become unemployed or when they are waiting for the start of a formal job. This was the case for Flavia, Oliver, Eduardo and Cintia, who decided to start changing the roof that was already very old and long in need of repair, because it happened that her favourite bricklayer, whom she very much trusted, had just left his job and was available.

There is one common characteristic among all informants: all family members make many sacrifices to see their dream of home ownership finally realised. They postpone small luxuries and dreams in order to achieve something bigger.

> Because when we are building, as everything is expensive, many things you don't do. You don't travel, you don't buy a cloth, you don't sometimes (...),but you restrict a lot (...) To have a soft drink only on weekends, right? You could not, you don't have so many privileges when you have an ongoing building site. You can't travel, you can't do vacation, you can't not buy a purse, a pair of shoes, my father had to deny those things to do that. And so did my brothers. And then they have managed to build, to marry, to have children, and then you have to choose other things, to buy building materials monthly... To buy materials first, and then to pay the bricklayer... To pay the building materials first and then after that to start building. First you buy the materials, and pay, then you pay the bricklayer... (Nivea, Pindorama)

> When we started building, we did not buy things for us. We ate only rice and beans at that time. We could not buy clothes anymore, shoes. All we bought before, a lot, we started not to do anymore. So that we saw we could do it faster. To build faster in order to stop living by rent, to save money to do something else. Then it worked out. We built really fast. Really fast. I remember as today. We could not buy vegetables either. For you to have an idea (Rosa, Jardim Canada).

So many sacrifices have, for these builders, a compensation. Home ownership is by far the most valuable capital for city *battlers*. Except for the units for rent, all the visited homes, even the very unfinished ones, were like an oasis of peace and security for their dwellers. People invest in recreational spaces, building gardens, with trees, vegetables and herbs. People sit in the shade and enjoy themselves. Many houses have a second kitchen in the backyard, where the family often meets for barbecues and picnics, a kind of practice that happens much more in private spaces than in public spaces, like in parks and green areas from European cities.

In his analysis of the ordinary building space, Habraken (2000) recognises what he calls a "two-step process", which can be also identified in many situations with *battlers*. Habraken confirms that this kind of process does not exist because of a need for flexibility or some extraordinary wish, but because it makes sense for self-producers in situations where shelter is essential and other concerns are just secondary: "basic decisions regarding shelter leave open secondary decisions addressing more detailed accommodations" (Habraken, 2000, p.102). To build in steps can be a brilliant solution for self-production. Nevertheless, technical aspects must be observed. For *battlers*, the building sequence has to resist climate variations, it should occur quickly because manpower is available only for short periods of time, and once one part of the shelter is finished, it provides time and space for the dwellers to continue building.

> Informal house in Latin America demonstrates how courtyard houses emerge in a sequence of separate building acts. Usually, a wall is first built around the territory. The house then grows incrementally, bit by bit, as the means become available (Habraken, 2000, p. 103).

By inquiring about informants' desires, regrets and frustrations regarding *overtime* building processes, I was able to learn that they all have achieved most of the desires they had since their arrival. This recognition is a great motivation to plan new changes for the future. The only major frustration I saw was with Renata, who always wanted to do a full renovation of her kitchen, which is small, dark, and poorly equipped. Because of high costs and her current situation (she considers the possibility of moving to an apartment after the marriage of her daughter), she just gave up on the kitchen renovation idea. Renata's dwelling has many other technical priorities that must be addressed, relating to drainage issues and repairs of the roof.

The greatest wish of Flavia's sister, from the time when they were kids, was someday to have a refrigerator with a freezer. In my first visit to their place in March 2013, I counted four refrigerators, distributed throughout the kitchen and in the dining room. Another wish, frequently mentioned by many dwellers, was to live in a house with a concrete slab. The preference for this or that particular building material plays a very important role in the choices people make, because of the symbolic value they carry. Dwellings are assets, and the building materials used are the display of the symbolic status they carry. In this respect, technical requests end up playing a less important role. We will see more about building materials and their symbolic power in Part IIII, section 4.6 - Finishings and Building Materials.

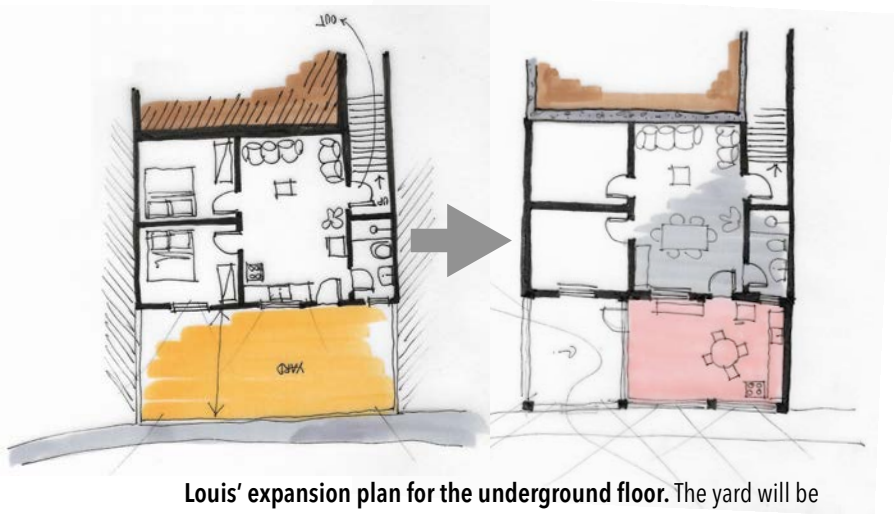
During the fieldwork, it became clear that the greatest wish among informants was the same and very simple: to continue to be able to self-produce as needs arise. That is what the house is for -- to satisfy people's needs as they come up, working as a shelter that embraces not only people, but just as importantly, their dreams, life changes and necessities. In this respect, self-production is the most effective strategy.

For example, Flavia and her sister revealed to me a long list of plans for the near future. They are willing to:

- transform the rooftop to a recreational space, since they longer do not have a yard. Only this task requires many secondary smaller tasks. The first is to remove the old asbestos roof (shingles and structure). Then they have to join small precast slabs to cover the old balconies of the second floor, covered by clay tiles. The family will have to remove the clay tiles and the wooden structure of the balcony, to build supports to the new slabs (they should be jointed to the dwelling's structure or build independently), and finally to assemble the precast slabs. After that they want to reassemble the old asbestos roof to cover the rooftop;
- install a new metallic staircase between the garage and the house to access the rooftop;

Flavia's dwelling. 1) metallic roof, 2) balcony covered with colonial roof, 3) gap between house and garage, 4) side of the garage.
Author's file, 2013.

- (maybe) build a small storage room in the garage for the handicrafts made by Flavia's sister;
- close the balcony with tempered glass windows;
- to transfer the office to another place, enlarging the living room, which they consider too small for their needs;
- demolish the old bathroom and to build a new one in a tidy corner of the kitchen.



Louis' expansion plan for the underground floor. The yard will be partially occupied by a new kitchen. Author's file, 2014.

Louis and his mother also presented a long wish list very similar to Flavia's, reflecting their desire to keep improving. Louis wants to build an outside kitchen in order to transform the current one into a dining room. Also concerned with space organisation, Nely creatively plans internal changes, with very few interventions (as discussed in detail in the section 4.3 - Space and Creative Power).

Rosa's dwelling, frontal concrete frame.
Author's file, 2013.

In Jardim Canadá, it's a similar story:

(...) I want to choose the tiles. I will see what I am going to install. I will install also ... everything ... fittings, the washing machine, the sink. I also want a little table, a little bench, because I want to have a small grill downstairs as well, do you understand? (...) I will do now, I will disassemble it (the roof) and to use wood to have a rustic style, do you understand? I will take the steel out, because I did it as provisory. I will change everything for wood. I will leave everything rustic (Hugo, Jardim Canadá).

Rosa's kitchen. Author's file, 2013.

Rosa's husband has built a concrete structure on the front part of the plot, with the expectation to expand the house to an upper floor in the future. Now Rosa hopes to build three rooms upstairs as rental unit to guarantee an extra income, exactly as her brother Hugo did with the small flat on the ground floor. At the same time, she wishes to install tiles and panelling, at least in her kitchen, which still has no finishings and a lot of mould on the walls next to the sink.

> It is only an empty space, like a yard for the upper floor. Because we built always with the intention to build upstairs. Well, not with the intention I have today. To build upstairs in order to rent downstairs. We had the intention to build for ourselves, up and down. We would build here and build the bedrooms upstairs. A living room and an empty space on that area there. This was the point. (Rosa, Jardim Canadá).

Of course, so many changes demand new and "good quality furniture", as confirmed by the wives of Hugo and Eduardo. This is also a wish for Rosa: "new cabinets and a kitchen table"; for Flavia: "a new sofa for the living room"; and Oliver's wife: "we cannot have a new home with terribly old furniture!"

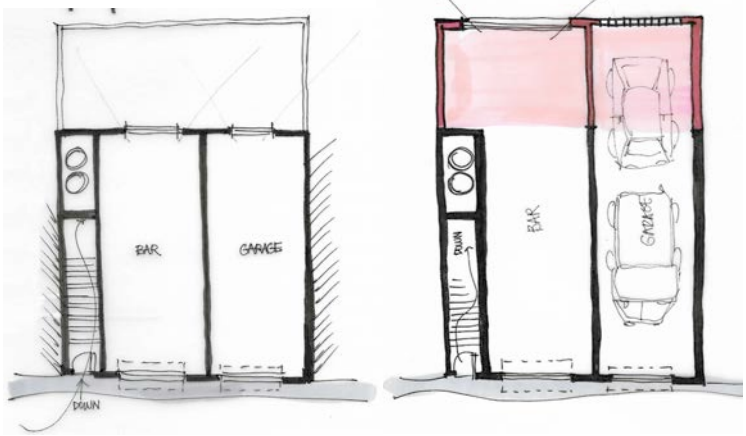
The possibility of supplementing the family income by using part of the house for rental or a small family business is clear, and seems to be a fairly common idea among self-producers. Cintia, Louis, Levy, Eduardo João, Carlos and Rosa all have concrete plans to enlarge their houses in hopes of increasing their future income:

- Cintia wanted to finish all of the building processes (dwellings D3, D4 and finishings in the bar) before the 2014 World Cup (Belo Horizonte was one of the host cities). She hoped to profit from the event with the installation of a TV in the bar. The idea was to make money selling beverages and snacks during the games and afterwards to go on vacation -- something she had never done in her entire life;

- Taking a vacation after finishing the second rental apartment was also Eduardo's wish:

> (...) to enjoy life, to travel, to make vacation, you know, to know that we do not need to invest in building anymore, to go for vacation, to think about having a small car (...)

- Louis wanted to expand the shop and the garage on the ground floor, which was already rented out, using the top of the slab of the expanded kitchen, as shown on the previous page.



Louis's expansion plan on the ground floor. The drawing on the left is the ground floor and the one on the right is the underground floor.Author's file, 2014.

With this change, he expects to increase the rental price and then to buy a car (as Eduardo also mentioned);

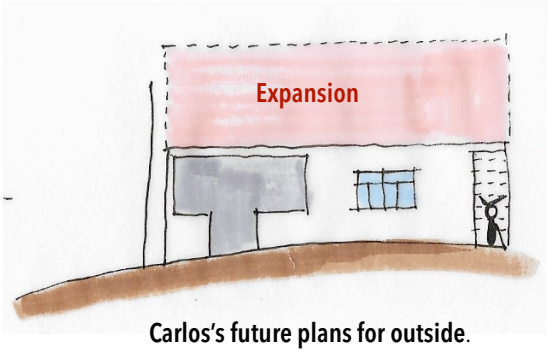
- Levy builds exclusively to rent. The sooner he finishes, the more quickly he will see a return on his investments;

- The dream of João is ambitious. His objective for the future is to build a shop in the free space in the front, and above the shop, another two-bedroom apartment for rent. If he does this, he will be the owner of five rental apartments and one shop. His plot would be almost 100% occupied. The yards will be the free spaces he uses to illuminate and to ventilate the apartments (see the situation in 2013 in Part III, page 177).

João's expansion plan for the enterprise (Section). The parts in rosé indicate the expansion, downstairs will be the shop and upstairs dwelling (D5) . Author's file, 2014.

- Even after his divorce, Carlos maintains the original idea he had with his ex-wife: to build a staircase juxtaposed to the house in the posterior part of the dwelling. It would serve as a covered sheltr for his motorbike. The stairs would access a long-term future second floor, possibly built for rental;

- As mentioned, Rosa intends to build another three-room dwelling on the upper floor as a possible rental. Still, she always considers exchanging spaces: to rent out the ground floor and to move in to the second floor with her children;



Carlos's future plans for outside. Author's file, 2014.

Technical repairs are not among the *battlers'* most mentioned desires for the future. Only Flavia had mentioned changing their water reservoir of 250 litres because she considers it too small for seven residents. They

currently have problems with their water supply.

Levy intends to work for an engineering company for a couple of years after getting his university degree. With that income, he hopes to buy an apartment in the formal city and to leave the neighbourhood. This is also a wish of Louis' mother and Nely. Renata thinks about buying an apartment in another neighbourhood as well, as already mentioned, because she is afraid to live alone in the house after her daughter gets married and moves out.

Battlers' self-production is one of the many collateral effects from capitalist relations in the periphery of the globalised world. These residents find in self-production the only way to access housing, in acquiring and building processes which fit to their socioeconomic conditions amid, again, the peripheral capitalism. In despite of that, self-production processes, which include the formal and the informal acquisition of real estate, is not essentially a capitalist production. This mode of housing production is not guided by profit-making, but by the exhausting pursuit of financial security in a social environment where low-income, precarious working conditions and lack of social rights prevail, as well as a tireless will to achieve a better and more comfortable social position for the future generations. Unfortunately, Brazil has proved that more appropriate and fair living conditions happen only through the acquisition of services, accessible only by those who can pay for them.

3 Space and Creative Power

An initial comment about decision-making in spatial organisation, internal or external, is that the informants for this research were very much conscious of their spatial needs and of the capabilities they have or do not have to meet those needs. Informants have demonstrated themselves to be extremely creative in using the available space they have. I explain this through four main aspects, which demonstrate how people could somehow equalise the building process with their personal contingencies and environmental conditions. The first is the very common phenomenon of the so called "half plot" (*"meio lote"*), where land parcels are informally subdivided and occupied by other housing units. The second concerns the smart use of creativity in reorganising the available spaces through examples of existing situations and future plans. The third is about privacy issues, since many times people have little space in comparison with their needs. The last aspect presents people's main satisfactions and criticism of their own decisions.

3.1 Informal Condominiums

The practice of dividing a regular plot into two or more parts is very common throughout Brazilian cities' peripheries, both in regular and irregular plots. It has been known by the expression "half-plot", indicating that a formal plot was simply divided in two, one on the side of the other, and basically occupied by two households. This practice can be recognised by the records of public electricity and water providers, which measure the consumption of each part separately, even when the partition is informally made. During the fieldwork of this research, I have discovered that there are many other variations of the sub-partitioning of plots regarding their use and their spatial organisation. In any case, the sub-partitioning of plots occurs because of and according to people's needs. I prefer to use the term "informal condominium" to address all variations of "half-plots", since we have more than one housing or working unit in a same spot, informally and to some extent irregularly established.

The following table gives us an idea of how the sub-partitioning of a plot and the establishment of informal condominiums are common phenomena among self-producers and residents of peripheral urban spaces, displayed in the case studies of this research. As we observe in the table, out of 15 case studies, 11 present aspects that could describe them as informal condominiums. I define an informal condominium as a building or a complex of buildings which contain more than one individually owned

or rented housing units and / or any kind of working unit, such as shops, services, and workshops. Informal condominiums can also be characterised by the nature of their use, as demonstrated below.

About Informal Condominiums

total case studies				15		
only the family home				2	Carlota, Rosa.	
informal condominiums				11	Flavia, Cintia, Levy, Nely, Louis, Oliver, João (I and II), Renata, Eduardo, Nivea, Hugo.	
type of use	1	only residential use	a) family home + housing enterprise	3	Flavia	family home + 1 small rental flat
					João I	family home + mother-in-law's home
					Hugo	family home + 1 small rental flat
			b) housing enterprise only	2	João II*	4 rental flats
					Levy	12 rental flats
			c) single household located in an informal condominium	1	Carlos	only the family home
	2	hybrid use: residential use (family home and / or housing enterprise) + commerce or service spots		7	Cintia	bar + family home + 4 renting housing units
					Nely	family home + 1 small rental shop
					Louis**	family home + rented bar + rented garage
					Oliver	family home + workshop behind the house
					Eduardo	family home + 2 small rental shops + 2 rental apartments
					Renata	family home + classroom
					Nivea	family home + professional kitchen + 6 owned housing units

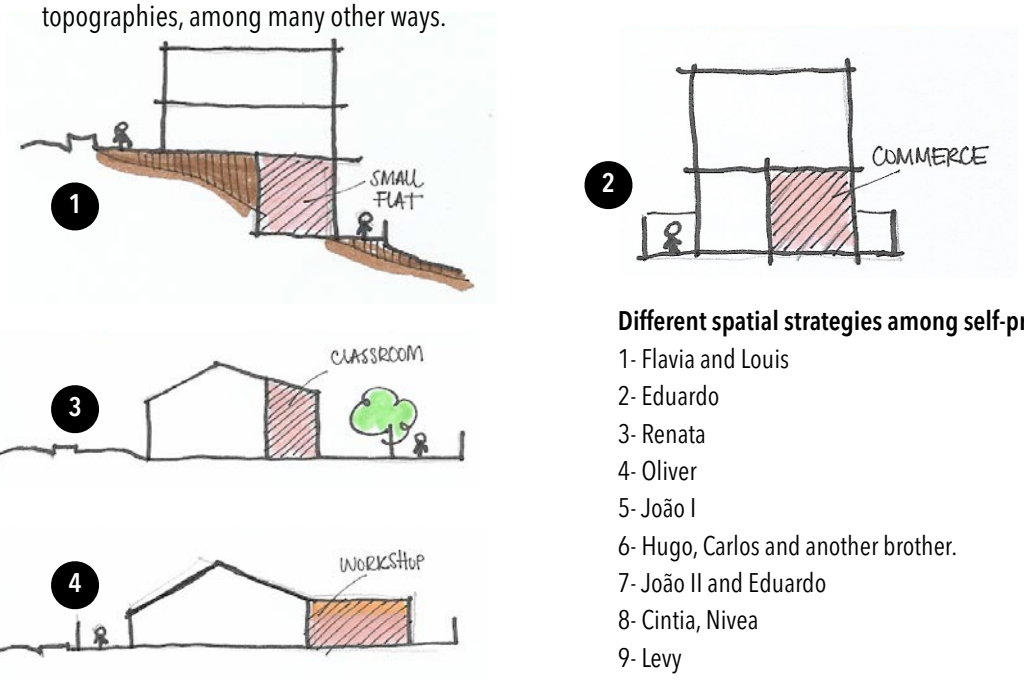
*João plans to build a shop in the free space on the front part of the plot (enterprise) and a rental apartment on the top. ** Louis plans to arrange a small flat in the underground using the inclination of the slope.

Regarding their use, it was possible to identify two different types: the residential use type (1), exclusively residential, and the hybrid use type (2), which includes some kind of business activity attached to or somehow related to the family home.

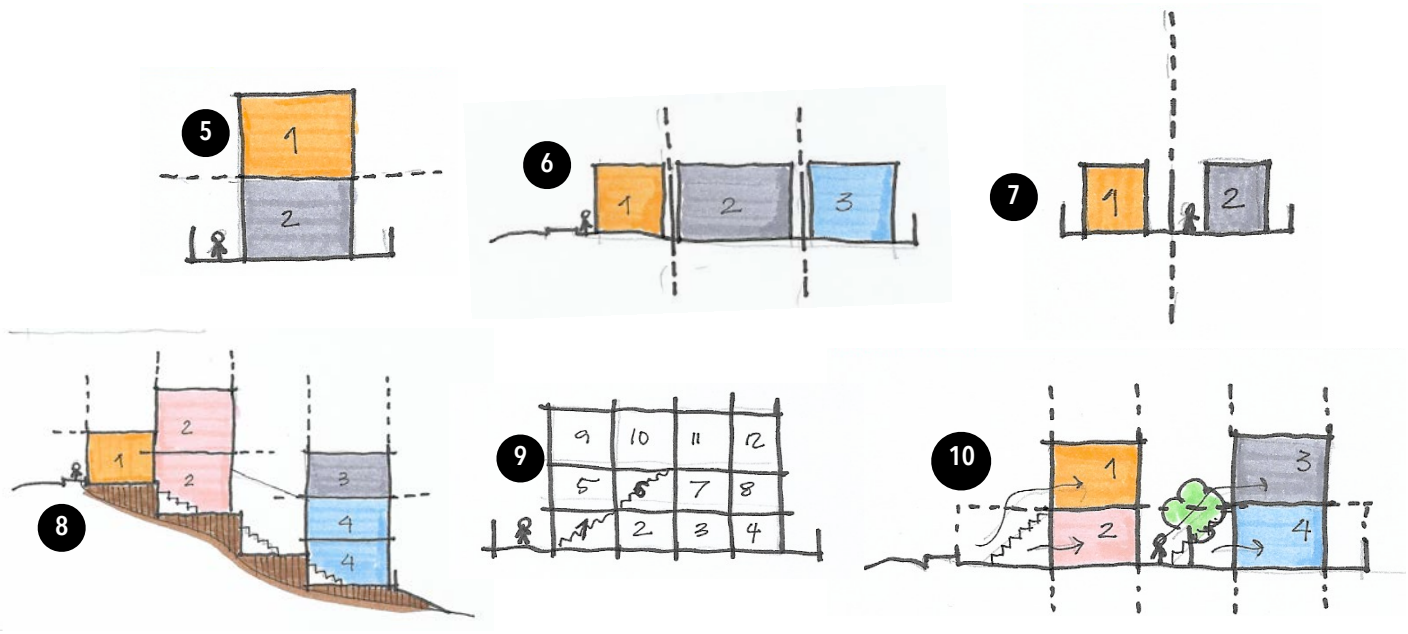
The residential use presents sub-types: (a) when there is a housing enterprise together with the family home, normally rental apartments (Flavia, João I and Hugo); (b) when there is only a housing enterprise, separated from the self-producer's home (João II and Levy); and (c) when a single home is located in an informal condominium, as part of a shared plot (Carlos).

The hybrid use is the combination of a business activity (normally small shops, snack-bars, rental garages, workshops and even small classrooms for private classes) with the residential use, in single family homes or in housing enterprises, including rental flats. Seven informants use their places in this way, sharing the space of their dwellings or of their plots with a non-residential activity, which also serves as an extra income source (Cintia, Nely, Louis, Oliver, Eduardo, Renata and Nivea).

Spatial organisation among the case studies of this research present many variations. A categorisation of different spatial arrangements would not be able to cover all the possibilities. So, instead of a catalogue of spatial organisations, illustrations that display the spatial situations found among the cases (1 to 10) will be presented, so that we can have an idea of their main principles. Regarding space, the main idea of an informal condominium is the possibility of sharing the space of the plot or the house in order to create a separate housing or working unit. There are no rules about this division. It may happen orthogonally in relation to the geometry of the flat plots, perpendicular or parallel to streets, or it may use the aerial space, using the top of existing houses or the underground in steep topographies, among many other ways.



Different spatial strategies among self-producer *battlers*.
1- Flavia and Louis
2- Eduardo
3- Renata
4- Oliver
5- João I
6- Hugo, Carlos and another brother.
7- João II and Eduardo
8- Cintia, Nivea
9- Levy
10- João II and Eduardo.
Author's elaboration, 2016.



Beyond the classical situation of the half-plot, when a regular plot is perpendicularly divided into two independent parts (n. 7), there is the case in which a regular plot is divided in parallel with the street, not in two, but into three equal parts (n. 6). In this situation, access must be shared among the residents. There are also situations in which the plot is not shared among outsiders, but the dwelling core is divided in a way that part of it is reserved for the family business: a workshop at the back part of the plot behind the house and a classroom, or an old garage transformed into working space (n. 3 and 4). Parts of dwellings located in half plots are also transformed into small shops, open to the street (n. 2). A very common situation is when self-producers use the aerial space on top of existing dwellings (n. 5) or the inclination of hilly topographies (n. 1 and 8). As previously mentioned, there seems to exist a kind of common sense in occupying sharp topographies from down to up, through the sequential occupation of small plateaus. This strategy allows for many different configurations which facilitate natural illumination and independent access to each housing or working unit. This type of informal condominium is a smart method of plot sharing, which makes a good use of local ground level differences. The use of small plateaus decreases the price of contention walls and facilitates the manual labour.

Among the case studies in this research, it was possible to identify the classical practice of sub-partitioning of regular plots in São Joaquim, with João and Eduardo, and in Jardim Canadá with the brothers Hugo and Carlos. The first case was a simple half-half partition, where both sides remain independent from another, each one with his own access and with different uses and internal spatial organisation. On the one side, we have only residential use - João has self-produced rental apartments

and does not live in this place, but on the top of his mother-in-law's house. On the other side, Eduardo has established, in addition to two rental apartments and the family home, two small shops that open to the street. In the case from Jardim Canadá, the plot was divided into three parts parallel to the street. Residents share access, and the use is exclusively residential.

This practice makes us question the original size of such peripheral subdivisions. If many self-producers share the plots, we might consider that the plots' sizes are not realistic for the lifestyles of the inhabitants. Self-producers would rather arrange themselves in less space in order to pay less. There were also cases where regular and irregular plots were occupied by more than one household and working unit, such as small shops or flats for rent, making a good use of the local topography. In these cases, it is clear that the state of regularity or irregularity of the plots plays a less important role on the internal space organisation of plots and dwellings, since self-producers do whatever is necessary to satisfy their housing needs notwithstanding the urban law. Above all, this practice envisages an extra income source for families, in order to achieve ownership faster and to assure and maintain some sort of economic security for the household.

Normally in self-production, use values predominate, such as in a small business maintained by family members for their livelihood. Even when residents share their plot or their building, reserving a part for rental, the profit-making character is less important than the use character, since people do not necessarily profit. They invest their economic resources, their time, and their manual labour in hopes of achieving financial security for their families - something which is by no means assured by their socioeconomic conditions, even with a formal job. Moreover, ownership tends to protect a family from the effects of economic recessions and political crises.

The informal character that prevails in the activities which establish informal condominiums gives self-producers the flexibility they need to build forward, whenever and however they can. This practice has changed the spatial configuration of formal neighbourhoods, which currently do not differ much from informal settlements, not only regarding their spatial settings but also in relation to the social group of their residents. As claimed by Perlman (2004), it is no longer adequate to associate a *favela* with an image of poverty. At the same time, the formal city is no longer a place for the poor (Valladares, 2004). Building practices found in *favelas* also take place in peripheral regular subdivisions, as we can see, for example, when we look at the cases of Cintia, located in Vila N. S. Fátima, and Nivea, located in

Pindorama, a regular subdivision. Both cases present more or less the same spatial configuration, even though they are different urban types. Spatial configurations have more to do with social practices (and then with social groups) and less to do with the location in the city.

Both Eduardo and João bought half-plots in São Joaquim. Originally the plots had either a 12m front by 30m deep or a 14m front by 36m deep, so that each neighbour had a very narrow plot of between 6 to 7m front by 36m deep. Eduardo and João have not only shared the original plot, but have also adopted a very similar strategy to occupy the space. Both of them started building from the back part of the plot to the front, leaving a free space on the front part of the land, on which they planned to build in the future, according to their needs and capabilities. They also reserved a free space, a kind of yard between housing units, to assure them enough illumination and ventilation (see sketch n.10 on page 226). While Eduardo has already built a garage and two small shops in the front part of his parcel, João still intends to occupy the front part, building a small shop on the ground floor and an apartment on the upper floor. In 2013 there was only a metallic roof installed there, to provisionally serve as a garage.

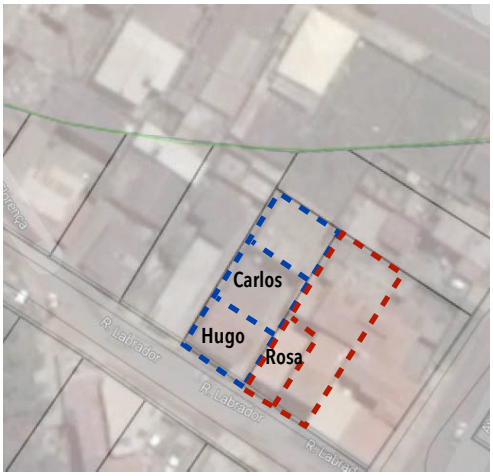
> (...) what I did right, in my opinion, was to make a good use of the plot's space. (...) Because of the fact that it is a half-plot (...) we could not afford to buy it all. We shared the purchase with a colleague. We bought 180 [square meters] (João, São Joaquim).

> Because... I decided to build on the back part of the plot, leaving the front part free, for me to have a future option. I thought: "I am going to leave the front part free, because I fear the water, and we would be more far", right, because the stream passed in front of our door (Eduardo, São Joaquim).

The decision of both neighbours was based mainly on their desire to be enterprising in the future. Eduardo was also afraid of the stream, which had many times burst its banks and caused flooding. As explained in Part III, in the recent past São Joaquim was very much affected by problems with its drainage system. Its population suffered a great deal from flooding, and of course this problem affected the appropriation of spaces by dwellers.

In Jardim Canada, the brothers Hugo and Carlos shared a standard regular plot of 12m x 36m with their brother-in-law. Each family lived in a 12m wide by 10m deep plot, with common access for people and vehicles. Literally on the other side of the wall, we find their sister Rosa, who together with her ex-husband, purchased a small parcel of a plot, which she has no idea of its original dimensions.

Original limits and plot sharing in cluster Jardim Canadá.
Author's elaboration from Google Maps, 2016.



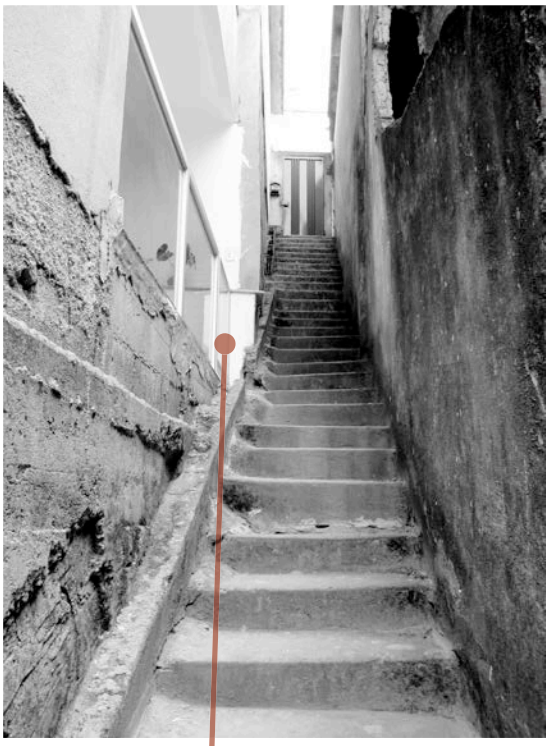
The small parcel, almost fully occupied by the dwelling, seems to present one-sixth (not one-half or one-third) of the area of one regular plot.

> This here is part of a half-plot. Six in front and nine deep (Rosa, Jardim Canadá).

The size of Rosa's original plot cannot be precisely estimated. If Rosa's plot is 6m wide by 9m deep, it can be that the original plot was divided into six parts. The original would be 12 (2x6m) by 30 (3x app. 9m). As we can also see, the arrangement of the buildings does not obey the original subdivision form. The blue line represents the original form of the plot of Hugo, Carlos and their brother-in-law, with 12m wide by 30m deep, and the subdivisions of their small condominium inside the original limits.

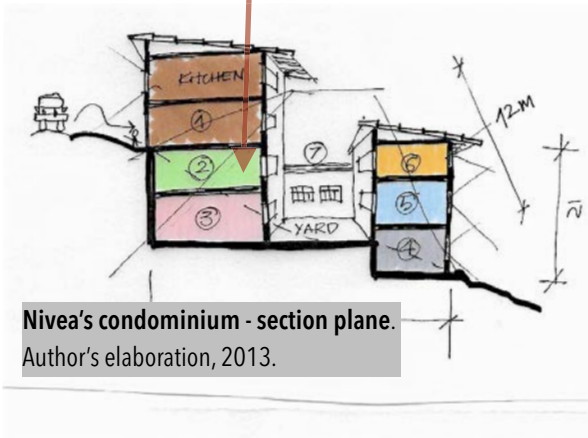
Rosa's plot seems to correspond to the size of one-sixth of an original plot (red lines). In spite of that, we see that the buildings around the corner do not follow the original grid, either.

Self-producers have taken smart advantage of the land inclination, using the aerial space to establish housing units. This was done by Nivea's father, when he started building at Pindorama, about 40 years ago. Cleverly, he started to build from the bottom up, constructing small plateaus for each one of the future housing units, accessible by a long stairway which goes to each of the independent plateaus.



Stairway at Nivea. The green gate is the access o the street. The red arrow shows the access to D2. Author's file, 2013.

Flavia did something different but also very smart, and was copied by Louis. Both dwellings are located on a slope that goes downhill. Flavia and Louis observed that an underground small flat could be built between the foundations (see sketch n.1 on page 225). Flavia managed to build the underground flat rapidly and soon had already an extra income source of R$400. Louis planned to so the same, motivated by the fact that his plot was not completely occupied. There is a narrow strip of free space behind, which could serve as access to the flat.

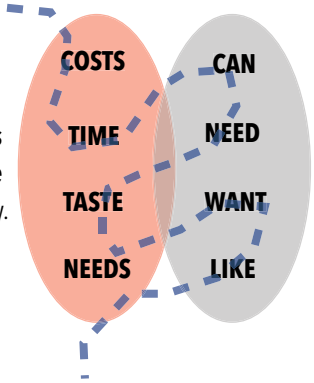


Nivea's condominium - section plane.
Author's elaboration, 2013.

Nivea's condominium - view from behind. Author's file, 2013.

The small flats will be rented by people from the same neighbourhood who can neither afford other rental options nor self-produce. As pointed out by Davis (2006, p. 81), battlers act as local landlords, "renting single rooms to the poorest of the poor". Self-producers have envisioned a market opportunity. Everyone needs housing, and concurrence in a *favela* and in a peripheral subdivision also exists.

3.2 Creativity

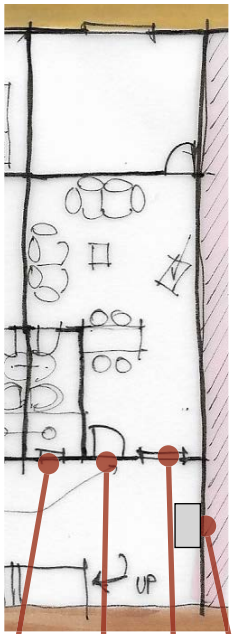


Contingencies, actions and creativity. The blue line represents creativity. Author's elaboration 2017.

The incompatibility between architects' conventional working practices and *battlers*' demands is confirmed when we observe how interesting people can conceptualise their spatial changes themselves, without having accessed any design method or visualised their spaces with 3D-models and professional technical advice. In most situations investigated in this research, people have taken rational and expedient choices, always based on their capability of managing costs, time, tastes and needs.

Illustration of "American Kitchen". Google Images, 2017.

Within this context, aesthetic preoccupations were practically never mentioned during the interviews; neither I have noticed them *in loco*. All decisions were purely based on people's immediate and practical needs, sometimes with a foot in the future, given people's plans and dreams for the coming years.



Floor plan of one flat. Levy's enterprise. Author's elaboration 2013.

Creativity is the major tool people have to deal with the contingencies in their everyday lives on space. With creativity, self-producers take decisions envisaging the coherency between what people can do, what they need, what they want and what they like. To illustrate this point, creative decisions taken by Levy, Nely, Carlos, Eduardo and João were selected to be presented here.

Flat's windows, front door and laundry spot. Author's file 2013.

Levy - "American kitchen", grill and laundry spots

When Levy started to plan his rental flats, he chose to integrate the living room with the kitchen, avoiding a high dividing wall between the two rooms.

This choice assures illumination to the living room, since the flats are configured in a "sausage-form" - long and narrow. All the flats are the same, with an "American kitchen" (a common term used by Brazilians to define an open kitchen), integrated with the living room through a high table with seats. This type of internal space organisation is very common in Brazil, and nourishes the imagination of all as something cool and modern. In Levy's case it was fundamental. A complete wall would harm the internal illumination of the living room, since it depends on light from the kitchen window.

Levy preferred to locate laundry spots in the common corridor rather than to include them inside each flat. According to him, this would have taken up too great an area inside the apartment, which was already too small. In spite of his coherent decisions, I noticed one spatial problem that could have been easily avoided: Levy located the two staircases in different places in the corridor. In my opinion, he could have built one stairway over another, which would have provided more free space in the corridor[4].

Absence of protection grill along stairs. Author's file 2013.

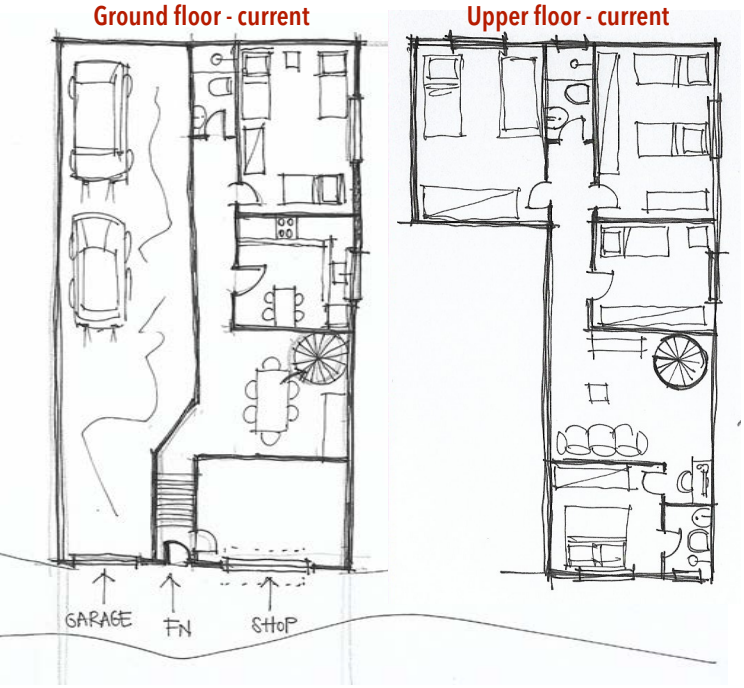
Although Levy does not pay much attention to security and even less to aesthetic parameters, he did take some details into consideration. Because of the narrow access to the building, which is through a narrow public alley, people might experience difficulties when bringing in large furniture and household appliances (e. g., a refrigerator or a washing machine). For that reason, he decided not to build a brick wall as a protection around the corridor, but instead to install a grill. In November 2013, the grill had not yet been installed and the corridor was still insecure, without any protection.

NELY - DEMOLITIONS AND CONSTRUCTIONS

One of the most remarkable internal arrangements among the case studies in this research was Nely's house. After building the house all at once because of the pressure to move in, she had to face a different challenge - to arrange the house in order to make it liveable for herself, her husband, her two daughters, one niece and two brothers. During my visit, she explained her plans to me in detail. It seemed that the house would change a lot, but curiously, with very few physical changes.

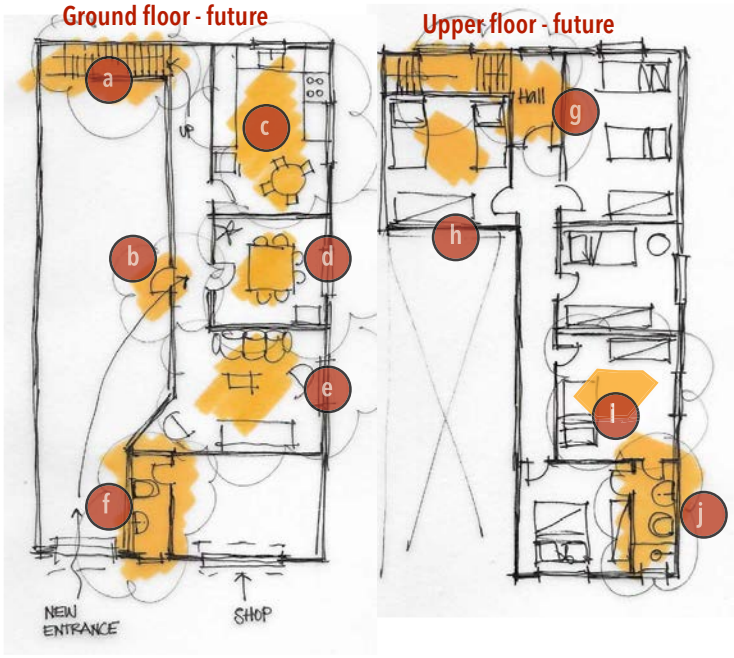
[4] Although I have expressed my professional opinion in this passage, my own observations on informants' space arrangements and tastes does not play a role in evaluating self-production processes in this research.

Nely's home in 2013 and plans for the future.
Yellow spots are plans. Author's elaboration, 2014.



Nely did not draw anything, but planned very expedient use and wall positioning changes, which would result in a completely different spatial setting. She planned everything alone. Her husband's role was only to support her with the manual work.

Nely's ideas on the reorganisation of the internal space of the dwelling demonstrated a deep knowledge about her family's demands, combined with a very conscious awareness of the capabilities (time and resources) of the family.

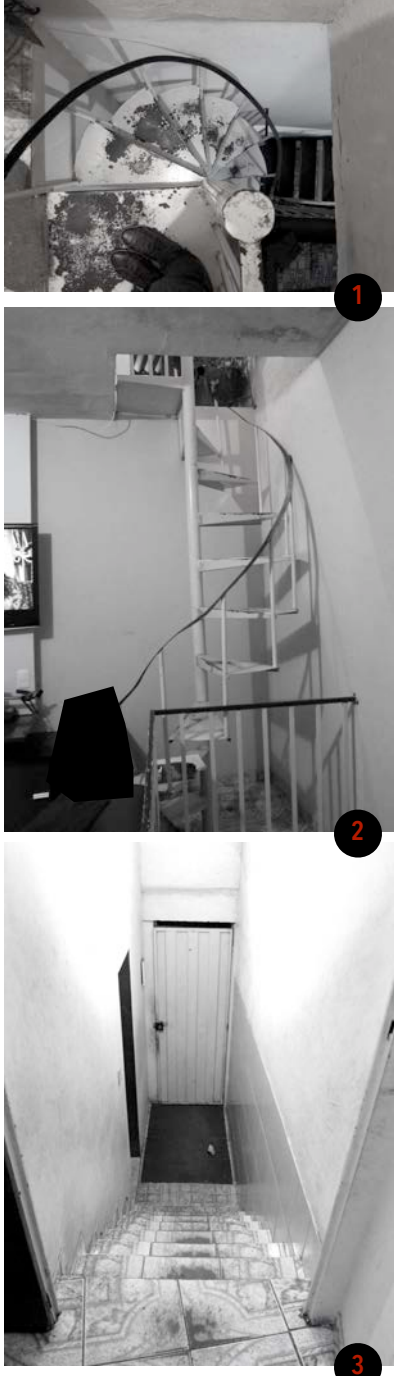


As we see in the sketches, Nely's changes will start with the removal of the metallic spiral stairs. The idea is to build concrete stairs at the other end of the garage (a), incorporating this space into the dwelling. She never appreciated the old stairs inside the living room, although admits that they had no better option at the time of the initial construction. This decision is combined with the change of the entrance door, which will be located in the garage (b) and no longer directly from the street beside the shop.

The unique bedroom, originally located on the ground floor, will become a completely new kitchen (c), while the old kitchen will become a new dining room (d) and the old dining room will become the living room (e). The original stairs of the entrance will be demolished. A new toilet will be built to serve the rental shop (f). This change will probably allow Nely to increase its rental price. On the upper floor, the original bathroom will be removed - Nely complains about the tiles (in her opinion too dark) and about some infiltrations and their size (too small).

She would like to leave the spot open, serving as a hall for those who come up or down the stairs (g). Because of the new staircase, one of the bedrooms on the upper floor will be smaller (h), which she thinks it is not a problem, because the house will have a new bedroom (i) where the original living room was located. Finally, Nely would like to expand the bathroom from her bedroom (j), so that it also opens to the other bedroom, so that both can use it.

As we can observe in the sketches on the previous page, Nely's main plan is to concentrate all bedrooms on the second floor, which will be a private area of the house, and to maintain all collective spaces on the ground floor – living room, dining room and kitchen. This renovation is remarkably interesting. With relative few changes, the house will be completely different, offering more comfort and privacy to all family members.



Nely's dwelling. 1)Metallic spiral stairs; 2)its location in the living room; 3) main entrance besides the shop. Author's file 2013.

CARLOS - COHERENT PHASES

Carlos built his dwelling in three phases. The interesting thing about his work is that, from one phase to the next, Carlos did not have to demolish much from what he did before. So, we can say that he organised the building process logistically and economically. The first phase was the construction of the initial embryo, with one finished bedroom, one finished bathroom, a kitchen without finishings, and a reused door and window.

Home growth - Carlos.
1) Initial embryo; 2) addition of living room and varanda; 3) future plan: varanda turns to a bedroom and access at the front. Author's elaboration, 2017.

At the time of the fieldwork, the kitchen still had an improvised sink and stove and no cabinets. In the second phase, Carlos added another room and an open entrance hall in the front part of the building,

with more or less the same area, doubling the built-up area. In the third phase, still only planned and not yet executed, Carlos intends to transform the entrance hall into a bedroom for his son, who, at least until 2013, used to sleep in the same room with him, and to improve the kitchen. The sequence makes total sense for him, and has also demanded relatively few changes to completely alter the use of the space.

Eduardo and João - Intelligent sequence, internal yards and accesses

Eduardo's condominium. 1) Ground floor (I did not enter in the rented dwelling (D2); 2) Upper floor; 3) Section plan. Author's elaboration, 2016.

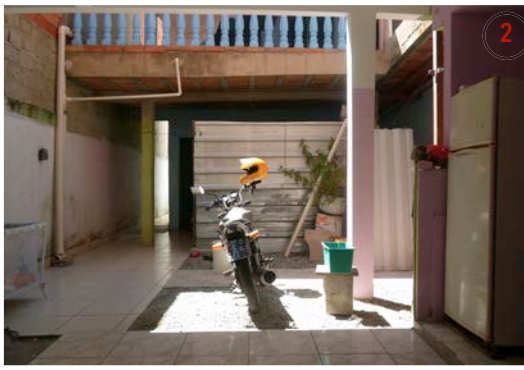
Eduardo has built two independent dwellings in the back part of his plot. The one built on the ground floor is rented, and Eduardo, together with his wife and son, lives in the dwelling on the upper floor. In the front part of the structure, he built a small snack shop on one side and a small room on the other side, which serves as a small clothing shop run by one of his daughters. Before renting the dwelling on the ground floor, another daughter lived there with her husband until they bought their own apartment in a popular collective housing enterprise. At the time of the fieldwork, Eduardo started to build another housing unit to rent on the top of the garage. Each dwelling is about 60m^2. The two dwellings built on the back part of the plot were previously one single house, later divided in two. Eduardo's intention was to assure one house for each daughter, as his support for the start of their lives. To proceed with the change, he transformed the old balcony into a living room.

The splatted dwellings preserve the same internal space setting, since he decided to use the same structure frame and division walls to avoid burdening the initial structure.

The dwellings have two bedrooms, a living room, kitchen, laundry and bathroom.

Eduardo's condominium. 1) Street view and 2) internal yard. Author's file 2013.

The most interesting aspect of the whole complex is that it presents three housing units, one garage for two cars and two small shops, all located on a half-plot equivalent to about 180m², with relatively good illumination and ventilation conditions for the housing units. This achievement is related to the existence of an internal yard, which guarantees light and air for the entire complex. This element makes a significant difference in the condominium, but was not properly planned by Eduardo from the beginning. The spatial arrangement was a result of a spontaneous process. Nevertheless, the current condition could be even better if the windows were bigger and made of a different material, which could provide even more light.

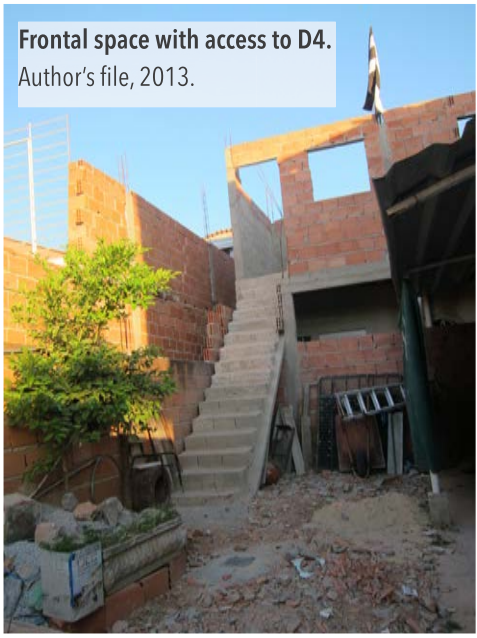


João's enterprise presents a very similar space configuration to that of his neighbour, Eduardo, as illustrated in Part III, page 177. Besides the family home, located in another part of the neighbourhood, João built two rental housing units in the back part of the plot, one over the other, and another two in the middle. The two-storey houses are also separated by a yard, which assures ventilation and illumination to each one of the four dwellings. As João wishes to build a shop in the remaining part of the plot, the dwelling in the front will have to have separate access.

Eduardo's condominium. The yellow part represents the yard. Google Earth, 2014.

> Look, here, when I came to do this here, I did my plan very nice, it is only the entrance of the second house I thought about changing it. But later on, now, I saw it will be nice. Here, this second house, I could have done the entrance behind, but its entrance is here in the corridor. There is a corridor and there is the next door, with a small gate, from where we enter those houses behind. This one I built there? Like, what I could do, in this standard, it was nice (João, São Joaquim).

João also started building from the back to the front of the plot, similarly to Eduardo. In that way, he leaves the front part of the plot for a later decision, which does not compromise the rest of the complex. Corridors, stairways and one yard assure ventilation, illumination and access to all housing units independently.



Frontal space with access to D4. Author's file, 2013.

The strategy of building in the same plot or building core, but independently, was already employed in the first self-produced / self-built dwelling made by João. Although built over an existing house, his mother-in-law's place, he managed the space in such a way that both houses had independent access. João built the upper house exactly like the ground floor house because of security reasons - he was not sure if the structure of the old house would support the new one. Still, we can see in the photos that there is a free space in the front part of upper- floor house, which demonstrates that the ground floor house is much bigger. In any case, João still has the option to expand the house to the front, if the structure below supports it. Again, the strategy of building from back to the front appears to be effective.

João's condominium. 1) Independent access with stairs in background and 2) internal yard. Author's file, 2013.

3.3 Privacy issues

Issues with privacy were always present in my excursions to peoples' homes. A common prerequisite was that each family member should have his or her own bedroom. This need has often driven spatial decisions and the sequence of the building processes. As most families are large, it is a daunting task to provide bedrooms for everyone.

Flavia's place, for example, has five bedrooms. Everybody has his or her own bedroom, except Flavia's little son, who sleeps in the same room with his mother. Flavia's sister remembers their beginning at Vila N. S. Fátima, when they had only one room in which to cook and to sleep. Even some time later, already in the 90s, after having spent seven years in another city, she had no place to sleep when she was back home. The only free space in the house was in front of the refrigerator, in the kitchen.

With Nely's family it is somehow the same.

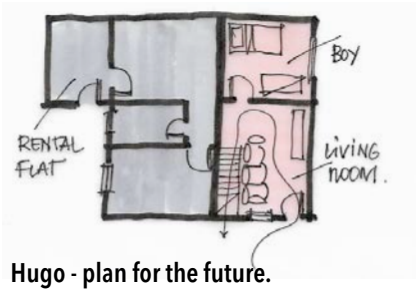
Family home (João). 3) Façade and 4) frontal free space over mother-in-law's place. Author's file, 2013.

The main motivation for the big change in the internal spaces of the family home, as explained previously, is to provide one extra room. In this way will be possible to comfortably accommodate seven family members.

Privacy is a preoccupation of Hugo's wife. She is really excited about finishing the arrangement of the ground floor because their young son urgently needs his own bedroom, separated from the three girls. At Jardim Canada, Rosa also faces problems of privacy at home, since she has not been able to build forward yet. With six children, they have only two bedrooms besides the living room and the kitchen. The family manages the space as well as they can:

> The boys sleep here (on one couch). I have a 12 year-old girl who sleeps in that room. And the small one sleeps with me. And the two girls sleep there (in another bedroom) (Rosa, Jardim Canadá).

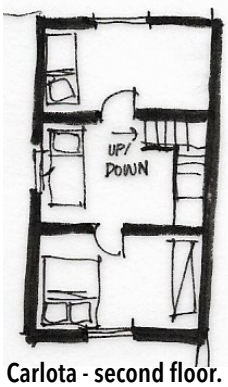
At Hugo's place there are different privacy issues, mainly concerning common access. As the family house is the first on a row of a shared plot, Hugo's family can see who comes in and who goes out, as well as the residents of the two other dwellings. For Hugo this is not a big issue, but his wife is not happy, and confesses to her desire to live somewhere else.



Hugo - plan for the future.
Laundry turns to boy's bedroom.
Author's elaboration, 2017.

> Yes, to have my house, with a lot of space, but right? I am egoistic. I always hid it from anyone. Then you have more comfort, more privacy, understand? (Hugo's wife, Jardim Canada).

At Vila Monte São José, I noticed a privacy problem on the upper floor of Carlota's place. Any person who comes up the staircase has to pass by one bedroom to access the other two. As we can see in the illustration, the bedroom in the middle (which has no privacy) belongs to Carlota's mother. The one above belongs to Carlota's daughter, and the one below to Carlota and her husband. Even though I had been bothered by this situation (while I was there, Carlota's daughter came out of the shower half-wrapped in a towel), this problem was not mentioned by the couple during the interview.



Carlota - second floor.
Privacy problems.
Author's elaboration, 2013.

3.4 Satisfaction and criticism

Informants are in general quite satisfied with their self-produced homes, which clearly motivates them to build forward.

Flavia - stairway to rooftop. Author's file, 2013.

As previously demonstrated, all informants are optimistic and are proud of their achievements. Self-producers might not be concerned with aesthetics and beauty, but certainly reserve some time and resources to transform their places in an oasis in the middle of the harsh city. Flavia plans a recreational space on the rooftop. For that, the family needs to make an effort to build a stairway to the rooftop. During the fieldwork a bricklayer has started the work, but did not finished. Hugo plans to have a grill on the ground floor, using part of the common access. Renata preserves a little garden on the front, with lemons and herbs.

Renata's garden. Author's file, 2013.

(...) a good space for us, to play karaoke (Flavia, Vila N. S. Fátima).

On the one hand, people have few complains regarding their space organisation. Cintia does not have any complain about the space of the house or about the plot sharing. During the interviews, Cintia's father has positively emphasised the area of the rental apartments from their condominium. He compares them with the apartment blocks built by the municipality, in the context of the programme *Vila Viva,* on course at Vila N. S. Fátima[5].

Cintia's father is very satisfied with the enterprise, since he believes the housing units present a satisfactory area and building quality.

Levy very much appreciates the spatial division he proposed and implemented in his enterprise. He elaborated everything himself, without having made drawings. While the urban law applied in Belo Horizonte implies, according to each case, a minimum setback of one and a half meters for this scale of construction, Levy's enterprise, with three pavements and around nine meters high, is only 50cm distant to the neighbour behind. This distance can not assure enough illumination and ventilation for the bedrooms.

[5] More about the programme *Vila Vila*, please see page 141.

On the other hand, people admit their mistakes, mainly the technical ones, recognising their repercussions on the space arrangement. About having a concrete column on the middle of the way, Eduardo claimed that the problem *is a matter of space:*

> If it is more in that direction, I would basically have a passage here and you would have a space here. And you will understand where I have stored my tools. Here is the limit. Here is where I keep my tools, my stuff, understand? So, my best virtue was to know how to make a good use of the space. (...) kitchen, bathroom, we will have a kitchen integrated with dinner room, I will do a division here, to isolate a bit the bathroom from the kitchen, and here we will have the kitchen will be integrated with the laundry. In this corner, it will be all together (...) Here is the living room, two rooms, and this room here, we would like to build another bathroom. But then, we changed our mind, to transform it into a bedroom for our small granddaughter, when she visits us (Eduardo, São Joaquim).

Eduardo's ground floor. The red arrow indicates the undesired column. Author's file, 2013.

Nivea comments that a big problem of her house was that it had only two bedrooms, despite of having a balcony. She had to improvise another bedroom using the space of the old balcony.

> And it is very bad a house with only two bedrooms. I improvised there another bedroom. (...) I left the balcony outside, that still has to be done, and would not build a house with two bedrooms, but with three bedrooms. A house must have three bedrooms (Nivea, Pindorama).

Nivea's ground floor. The red circle indicates the improvised bedroom where before was a balcony.
Author's elaboration, 2014.

4 Technical Complications and Building Materials

As previously mentioned, self-production has always existed; people have always built their homes themselves, deciding about spatial organisation and building materials and, in some cases, also taking direct part in the manual work on the building site. In this research, self-producers proved to be more critical and proactive regarding spatial organisation than the technical aspects of the dwellings. Many technical complications have been simply taken for granted by self-producers, as if infiltrations, cracks, differences of level and spoiled materials were to be expected and were to some extent normal.

The conflict between the concepts of *formal* and *informal* become more evident when we look at the technical aspects of self-produced building sites, especially the recent spatial and technical interventions made by *battlers*. The two concepts have been questioned by some recent lines of research on urban studies, trying to escape, on the one side, from any kind of idealisation of the informal, and on the other, from the dogmatic adoption of formal types of planning and building. The question is, then, how to analyse technical aspects of self-production processes without rejecting the technical decisions people make, judging them through the eyes of an expert, and at the same time being critical with regard to the costs (economic and non-economic) that people have to pay because of them.

Therefore, the present analysis is focused on identifying the most common technical complications amongst the case studies of this research, and determining if they follow some kind of pattern. Probable technical causes are identified and, most importantly, what is behind such technical complications, in the form of punctual or repetitive problems.

First of all, it is important to note that technical problems, whether simple or complicated, never stopped self-producers from building forward, as illustrated by a comment of Nely's husband:

> (...) when something bad happened, I just kept doing it! (Nely's husband, Vila N. S. Fátima)

Together with the lack of economic and non-economic resources, technical problems appear because the available building materials and construction elements do not present the necessary attributes to serve self-producers' demands, based on flexibility and autonomy.

Flavia's house, view from the back. The white arrows show the colonial roofs, which will be substituted by precast slabs. Author's file, 2013.

We can see an example of such incompatibility in Flavia's case. After being deeply disappointed by the problems caused by the *colonial* balcony, Flavia's sister decided to remove the ceramic roof and to substitute it with a precast small slab. At the time of the fieldwork, this was only an idea, without an exact forecast of when they would actually do the job. In any case, I questioned how the new slab would be supported and how the junction of the old slab and the new would be resolved, mainly in light of a very probable penetration of rainwater through the gaps between the old and the new structures, as often happens. A ceramic roof is a completely different construction system from a precast slab. The slab, however, would provide a solution for their dissatisfaction with the ceramic roof. At the same time, it would increase the size of the rooftop, which they were planning to use as a recreational space for the family.

Precast slab, using reinforced concrete beams and ceramic bricks as infill. Author's file, 2013.

In general, the building materials which are easily found in the local markets do not allow for many changes. This causes a huge waste, which, on the one hand is taken for granted by self-producers, and on the other, becomes a significant consumer market. The enlargement or the addition of one extra room, for example, results in the complete demolition and waste of existing walls and slabs. Electric and hydraulic pipes might not all be reused, and plaster and painting are reduced to waste material. Many self-producers think of the addition of as kind of a *Lego* part. It is a combination of being easy going but at the same time dealing with the construction work in an abstract way. The substitution of the colonial balcony with a precast slab is an example of that.

Despite all the problems identified during the fieldwork, I could not rate self-production as technically bad. Let us recall that 70% of the residential constructions from Belo Horizonte, a city of 2.7 million people, have not been approved by the municipality, and most probably have never been in the hands of a formal professional (see Part II, page 63). In any event, among the 15 case studies of this research, I could identify 59 technical complications, which could be divided into six large groups - **water, thermo-comfort conditions, geometry and alignments, structures and dimensioning, security and finishes and building materials.**

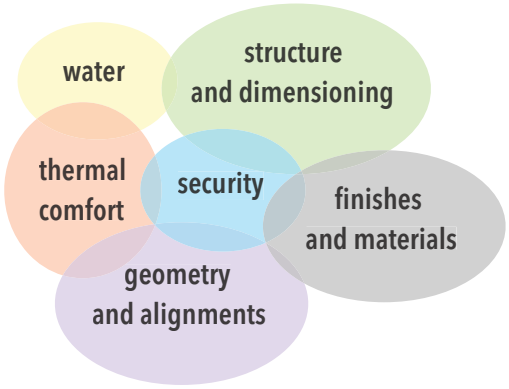
Spatial aspects have more to do with personal tastes and private needs, while technical aspects are addressed by economic and non-economic resources - people, time, money and materials. Trying to

provide a neutral analysis, detached from a romantic view of informality and at the same time from a dogmatic belief in formality, I distinguished the information I got in field in two major categories. One category represents the information people reported during the interviews, and the other the information I gleaned for myself from my own observations as soon as I entered people's homes. The table below illustrates these two categories of information and their sub-categories:

Types and number of information on technical complications

1	**Informants' reports**	current technical problems, hypothetic causes and solutions given by themselves	34
		preventive actions taken by informants, who previewed future problems themselves	6
2	**Researchers' observations**	current technical problems not noticed or not reported by informants	14
		situations that can cause future problems, not noticed by informants	5
Total			**59**

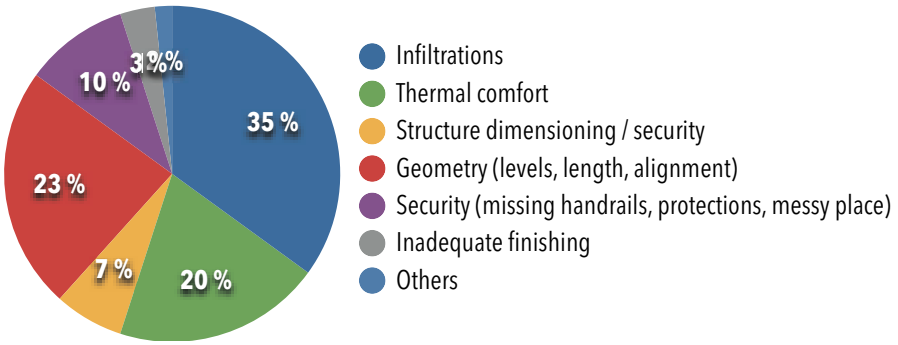
Five big groups of technical complications



All technical complications found during the fieldwork are summarised in the table *Technical problems, causes and resolutions*, in the Appendix pages 310-314 Out of 59 problems, 40 were reported by informants. Of these, 34 were current technical problems and 6 represented possible future problems, already previewed by dwellers. Another 19 technical complications were not reported, but only observed *in loco*. Of these, 14 were clear technical defects and another four were technical aspects which were not problematic at that particular moment, but might cause technical problems in the near future.

As we can see in the graphic, the most common technical complication found among informants were infiltrations, followed by problems regarding thermal comfort. Geometric problems are also expressive. Problems related to structure, security and finishings play a less important role.

Summary Technical Problems



Summary of Technical Problems - %.
Author's elaboration, 2017.

4.1 Water

The summary of technical complications reveals that the most common problem faced by all informants except one is the rainwater and the lack of resources (materials and know-how) to deal with infiltrations. Problems with water were present among almost all case studies as either an existing problem or as a threat that required prevention. Only Eduardo did not mention infiltrations, mould or leaks, nor did I notice any in his place.

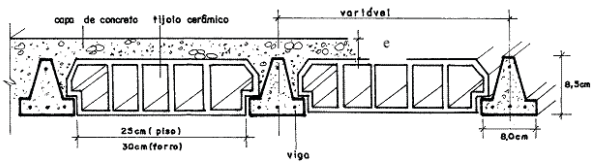
Infiltrations.
Author's file, 2013.

The choice of the type of covering and its correct assembly plays a fundamental role in the prevention and elimination of infiltrations. Rain water accumulates on the upper part of the covering slabs and infiltrates, causing mould.

This common phenomenon mostly occurs among self-producers and self-builders because building processes very often stop after the assembly of the first slab, since the main objective of most self-producers is "to cover it and to move inside", in order to stop paying rent, as we saw at the first section (1 Acquisitions). In this way, self-producers can invest their economic resources in the improvement of the dwelling, building forward. In many cases, there is so much still to be done that the most elementary tasks after the assembly of the slab are postponed.

Massive concrete slab and precast slab.
1- Massive concrete slab - top view.
2- Massive slab without protection.
3- Precast slab - view from below.
4-Precast slab without protection.
Author's file, 2013.

Slabs remain completely unprotected, without even the thin layer of concrete, normally used to regularise the surface. Self-producers need to finish bathrooms and kitchens, fundamental spaces for their everyday routines. In the self-produced dwelling market, the most used type of slabs are the ones made of reinforced concrete, moulded *in loco*, or precast concrete slabs, assembled *in loco.*



Precast slab - detail.
Blog do Engenheiro Civil, 2011.

This type of covering has become very popular in recent decades because it is cheap and easy to assemble quickly. It also provides better thermal conditions than the conventional massive ones, keeping the internal spaces cooler. In Brazil, the most common model consists of 8x8cm reinforced concrete beams positioned each 40cm in one direction, filled with ceramic bricks or Styrofoam blocks (special for construction). Following the assembly, it requires a thin layer of concrete on the top.

The imprecision about the construction of a second floor plays a role. The decision about if and what exactly to build forward is rarely immediate. If the slab is only for covering, it needs adequate protection, an asphalt membrane or another roof on the top, because only one layer of thin concrete is not enough to block the penetration of rainwater. That is one of the biggest problems of *overtime* building processes. It often happens that slabs (massive or precast) remain without protection for months or even for years.

Many self-producers, counselled by the manpower they hire, believe that a thicker slab or a thicker layer of concrete on top of precast slabs can resolve the problem. Another method is to build the massive concrete slab on a little incline, for the water to drain. And to some extent it will - out onto the walls, which also causes infiltrations, since there are small gaps between windows, walls and edge beams. We can imagine how much people have spent on cement, water, sand and stones to produce thick massive concrete slabs, believing they would prevent this problem. Besides not protecting them from infiltrations, a thick massive slab or an over-dimensioned thick concrete layer on a precast slab puts too much weight on the structure of the entire building and might cause cracks.

> P: I did not see any infiltrations. And this precast slab, did you choose it or someone did oriented you?
> C: No, because I have worked with this, right? I saw people doing and I thought: "This is what I want to use at home too". Sometimes I see if the neighbour is doing something interesting (Carlos, Jardim Canadá).

A typical *barraco*.
Mazonni, M., 1960, cited in Kapp and Baltazar, 2012, p. 7.

The use of a slab to cover dwellings, instead of a roof (with or without panelling), has been preferred by popular dwellers. All informants in this research indicated that the slab was a priority. A house without a slab carries the stigma of a poor house. It evokes memories of hard times, when residents could afford only a cheap asbestos roof structured with peasant metallic or wasted wooden elements (a

barraco, see picture before) . Besides, a house covered by a slab gives the user a feeling of more security and thermal comfort, especially when very strong rains come.

D6's building site. Everything was humid because of the rain, direct inside the building site. Author's file, 2013.

In this regard, Cintia's situation is typical, because it illustrates a step-by-step building process in which covering slabs have remained unprotected for quite a while. In September 2013, the dwellings D5 and D6 were far from being finished. Still, Cintia wanted the building workers to finish the dwelling D5 first, so that the family could move in as quickly as possible. As a result, the dwelling D6 remained without any covering or protection against rainwater for weeks. After some time, Cintia decided to focus back on the dwelling D6, aware of possible infiltration problems coming from water on the uncovered and unprotected storey, despite the family's wish to finish the other dwelling first.

The idea then changed. They decided to build all the brick walls of the dwelling D6 and to cover the corresponding area, leaving an uncovered area behind the apartment, over the bar, as a kind of backyard. On one hand, Cintia solved the problem of the bar, which is protected by the dwelling D6 and its covering. On the other, the backyard remained without adequate protection, as did part of the bar which was located under this area. She intends to protect it later, using a thick asphalt membrane. On the covering slab of the dwelling D6, the bricklayer will apply a thick layer of concrete, with an inclination directed to the outside, though without any gutters, and will plaster it with an asphalt membrane. One of the many bricklayers who worked at Cintia's building site told her that the secret to protecting against infiltrations is the concrete mass. It has to be very well mixed, like a cake. Cintia's father confirms this theory, emphasising that a good mixture will not allow the rainwater to penetrate.

Front yard at João's home. Author's file, 2013.

Section of João's home over his mother-in-law's home. Author's file, 2013.

João's home shares similarities to the dwellings built by Cintia. The dwelling on the upper floor is smaller than the house downstairs. A large part of the covering slab of the house remains uncovered. João promised his mother-in-law that he would cover it, specifically to avoid water infiltrations. He did exactly what all informants have done (except Cintia, who used also asphalt membrane) and

applied a thick layer of concrete on the slab surface. Afterwards he installed tiles on the floor and built a galvanised roof.

The front yard is triply covered - by the thick layer of concrete, by the tiles on the floor, and by the metallic roof. From João's point of view, he has taken all the necessary measures he could to avoid infiltrations. In contrast, Levy plans to maintain his building without any roof, only covering the precast slab with a concrete layer, pumped upstairs by a machine rented by the hour. As we can observe, there is a general belief among self-producers that an inclined thick layer of concrete is enough to protect the slab surface from rainwater. The use of asphalt membranes is not so popular and might still cause overheating in dwellings because of its colour and thermal inertia.

Brazilian *mutirão*. Author's file, 2013.

Flavia's sister remembers the first time they saw a house covered by a concrete slab, built in the neighbourhood in the late 70s, soon after the arrival of the first residents at that area. The house belonged to a former police officer. Everybody went there to see the well-made house, which was very different from all the others, most of which were covered by an asbestos or zinc roof. Time passed and zinc roofs remained, more so than asbestos roofs, given the problems related to pollution and the health hazards of handling asbestos. Rapidly, concrete slabs became even more popular, built through joint efforts of neighbours and relatives during the weekends (called *mutirões,* the Brazilian term for communal work). After the constr host family offers a barbecue as demonstration of gratitude. Many reside and asbestos roofs to cover massive concrete slabs, with the purpose of spaces, since they retain the heat.

***Colonial* roof.** Author's file, 2013.

The installation of a roof on the slab allows the formation of an air layer, that helps to equilibrate the thermal conditions inside the house. As time goes by, massive concrete slabs are being substituted with precast slabs, which are lighter, cheaper and easier to deal with in comparison to the massive ones. This type of roof has proliferated all over Belo Horizonte's metropolitan area, in low-income as well as in formal and expensive building sites. Very common among middle- and high-income homes is the so-called *colonial style* roof as well, made by the assembly of ceramic tiles on a wooden structure.

This Portuguese architectonic heritage has become a symbolic asset, a means by which to distinguish social groups. The roof is assembled *in loco* with a wooden structure and ceramic roofing tiles, with inclinations of up to 30%. This roof is also used to cover massive concrete- or precast ones, given the good thermal conditions that the combination offers.

Massive concrete slabs demand wooden formworks, or shuttering, which is an additional cost for self-producers. This cost dictates that many self-producers use the precast model. At the same time, those who have easy access to wooden moulds choose the massive model. To choose of the type of the slab is a matter of resources. Still it happens that precast slabs are not so familiar to some self-producers, who have used the massive model and later on have regretted it, believing that they could have spent less.

Wooden formworks.
Author's file, 2013.

An interesting device that is currently affordable for many self-producers is a pumping machine. It takes the concrete mass up to the rooftop, eliminating the need for manpower. This device is a substitute for the local habit of mutual help. It is especially useful for multi-storey constructions, since workers do not risk injury to themselves, as often happens in self-produced building sites.

> When we would imagine that a poor [person] could use this [the pumping machine] kind of service ? (Cintia, Vila N. S. Fátima).

Concrete pumping machine.
Author's file, 2013.

According to Cintia, who has offered many barbecues for workers in *mutirões*, the pumping machine is more practical.

> You pay for the service and it is ready. It is less tiring, although the mutirão is very funny. People do with love. But they eat a lot, too (Cintia, Vila N. S. Fátima).

Infiltration on the wall.
Author's file, 2013.

Along with the infiltration of rainwater through the ceiling, it is also very common for infiltrations to occur on the upper part of the walls, caused by the rainwater that penetrates between the slabs and the edge beams. Infiltrations at the base of walls are also very typical, caused by water coming from the soil through capillary action. If the floor slabs are not correctly protected, the water penetrates and the bases of the walls become mouldy. Finishing materials are insufficient protection against water intrusion and are very quickly spoiled. More than once I saw the painting layer start to stuff and after some time simply fall out. Those defects make the dwellings look

like older than they really are and more difficult to take care of, since they a
dirty. Walls are always impregnated with mould, and get cold and humid.

***Grafiato*.** Author's file, 2013.

Many self-producers are convinced by construction workers to apply special textures on the walls, believing that this will stop infiltrations. This is what Flavia told me she would like to do on the walls from the dining room - "we will use a *grafiato*". *Grafiato* is how a special kind of texture for walls has become popularly known in Brazil. It consists of a rigid layer of an acrylic mass that presents a wrinkled and grainy aspect. It favours the durability of wall finishes because of its water-repellent attributes, hiding infiltrations. This type of finish became very common among Brazilian popular dwellings and began to carry a kind of popular taste stigma.

Window without lintel and sill. The red arrow indicates infiltrations spots. Author's file, 2013.

Another version of infiltration, very common in self-production processes is that which occurs around windows, mainly under and at the sides, as a result of the penetration of rainwater coming from outside through the gaps between window frames and brick walls. This happens because windows are installed directly on the parapets of the brick walls, without any sills under them or any lintels above. The situation was especially noticeable at Nely's house and at the ongoing building site of Cintia, where no doors or windows had sills, lintels, or any water conductor. Something that make it even worse is when the wall is buffeted by strong winds. This happens when houses are located on high and open spots and without the protection of physical obstacles that could break the dominant wind. All the dwellings I visited in Vila N. S. Fátima presented this problem, since it is located in a higher part of the city, on the slopes of a mountain.

Windows and doors without lintels and sills. Author's file, 2013.

With respect to windows, one of the consequences of the combination of wind and rainwater is the mould on the walls inside the rooms, coming from outside. As windows are normally installed without lintels and sills, small cracks start to appear diagonally, allowing the rainwater to penetrates there. Rainwater crashing against the walls is a complicated issue, since the walls are not protected for that. They only receive a layer of plaster and then one or two layers of paint, which in many cases is not enough to prevent the damage caused by strong rains.

Problems with the public piping system also directly affect private dwellings. With Louis' home, infiltrations in the walls appeared because the dwelling was built in the underground floor, very close to the public water pipes, which are constantly blocked. The water ends up leaking through small gaps in the connections and reaches the side walls of the dwelling.

Renata's home is another example of how the public system can be responsible for a litany of problems in the private sphere. The district of São Joaquim was established on a depression close to small streams, which were completely or partially covered when the municipality of Contagem started to urbanise and sell the plots from the old farm which would later form the neighbourhood. The public water and sewage systems were under-dimensioned and they get completely full when there is a lot of rain. Consequently, the water enters the dwelling through the piping, and the streams breach their banks. Water reaches people's homes from inside, through the piping, and from the streets that are completely flooded. This inconvenient situation happened to Renata many times and damaged the fundaments and the base of the walls of her house. The bricks of the lower part of the walls became damaged and had to be replaced - a very delicate task which was done by Oliver and his team of workers.

> The bricks simply started to fall apart, they were all spoilt. He had to install new ones, small bricks. He almost had to build another wall. At my daughter's room, he took half of the wall out. At my bedroom as well, and at the living room, too. It was everything spoilt, because of the water infiltration. (...) there was a defect, something that accumulates the water. And with any rain, water accumulates here. The stream is rapidly full. So, what happens? The level here is low. Very low. If one stream is full and the other too, there is no outflow. And the water starts to come down here. And my house and the others are located in lower levels. At Oliver' house the water does not come in (Renata, São Joaquim).

Some self-producers have also taken decisions to prevent the accumulation or the penetration of rainwater. Eduardo, aware of the infrastructural problem in São Joaquim, built his house about 2.10m higher than the street level. Today, the house and street are at the same level because of the many layers of paving the street has received since then. The brothers Hugo and Carlos left about 30cm space

between their two dwellings, with the intention of preventing infiltrations coming from the junction of two different roofs.

Water intrusion might also remain unresolved inside dwellings because of the lack of adequate construction details. Rosa did not manage to install a baseboard to protect the junction of the wall with the sink against the invasive water, and now the wall is fully covered with mould. The infiltrations can easily penetrate through the wall, which is also a division wall, and might reach the neighbour's dwelling. With this example, we can see how avoidable a small problem can be and the dimension it might acquire if not resolved.

Mould on the wall by the sink.
Author's file, 2013.

> (...) we did not install the baseboard when we built here and the water runs, and that is why it is wet here. I have to find a way of fixing it. My husband, he ordered this bench and installed the bench, but the board did not come. I think it was his thing, slowness. It was not lack of money, it was slowness. (...) But I have to install it. It was my slowness as well, because I still did not manage to install it (Rosa, Jardim Canadá).

I can imagine how hard a simple task like this one is for Rosa hard to achieve. Working from 7:00 to 17:00 every day, including Saturdays, with six children to take care, the installation of a baseboard becomes just a detail.

From these few observations we can conclude that water is a very serious technical problem for self-producers, a problem denied by researchers and by the municipality, which does not take any responsibility for empowering self-producers and the manpower that works for them. As with many other technical problems, self-producers tend to take water infiltrations for granted. Nevertheless, this problem spoils finish building materials, brick walls, and foundations.

4.2 THERMAL COMFORT

The second most common technical complication found among the case studies of this research were those related to the lack of illumination and ventilation, excessive exposure to wind without protection,

very dark, stuffy, warm or too cold rooms, many times worsened by the humidity that comes with water infiltrations.

Issues related to thermal comfort have very much to do with location, together with solar orientation and window positioning. In parallel, the right choice of building materials also has an impact on thermal conditions in houses that are too warm or too cold and humid. They probably have a type of covering that accumulates the heat without adequate isolation and without cross-ventilation inside the rooms. Uncovered massive concrete slabs and *asbestos* roofs are examples. Massive concrete slabs receive direct sunlight, accumulating heat all day long.

Zinc roofing. Author's file, 2013.

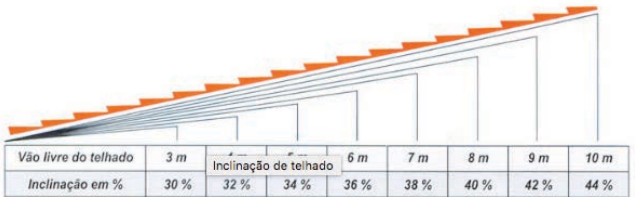
Asbestos roofing. Author's file, 2013.

At night, when it is cooler outside, they lose heat to the interior of the dwellings, making them even warmer. The problem is that massive concrete slabs present high *thermal inertia*[6] - because of the chemical constitution of the materials together with their geometry. *Asbestos* has more or less the same heater effect. The use of asbestos dates to the early 40s in Brazil and became very popular, mainly among the poor, along with zinc roofing. The use of asbestos has been strongly discouraged because exposure to it can cause a series of incurable and progressive diseases of the respiratory tract. Slowly, asbestos roofing tiles have given way to zinc roofing and precast slabs with perforated ceramic bricks. Only one case study in this research presented asbestos as roofing.

P: If your slab is covered. Is it?
C: Look, this is the roof.
P: This is asbestos, right?
C: Asbestos roofing tiles. Fibro.
P: And is the house warm?
C: Warm. It is not much more because of the windows. Because here we don't have glass. We have only the frames.
P: I asked because generally this roof... many people complain, that is why I asked you.
C: No, no. Without the glass, I do not have any problem. I am using only aluminium, to use cool things, to do it cool (Carlos, Jardim Canada)

6 "Thermal inertia is a measure of the thermal mass and the velocity of the thermal wave which controls the surface temperature of a material. In heat transfer, a higher value of the volumetric heat capacity means a longer time for the system to reach equilibrium" (Wikipedia, 2017).

When we analyse the general thermal conditions of the visited dwellings, we see a vicious circle. There is always more than one reason combined another. At Flavia's place, a big conflict regarding thermal conditions is over the colonial balcony, recently covered by ceramic shingles and a wooden structure. All the family members complain about the balcony, saying that its shingles are all dirty, full of mould and leaks. They also complain that the balcony is very cold because of the direct wind. In this case, we have the opposite problem regarding temperature - the space is too cold, because ceramic shingles transmit the heat to the outside (when the outside is colder than the inside), refreshing internal spaces. This situation is aggravated by the position of the house and of the balcony, which is facing a direction where there are no obstacles. When it rains, there are many leaks and the balcony is completely wet. Those problems are a frustration for the family, who always wanted to have a *colonial* balcony, a symbol of social elevation.



Vão livre do telhado	3 m	4 m	5 m	6 m	7 m	8 m	9 m	10 m
Inclinação em %	30 %	32 %	34 %	36 %	38 %	40 %	42 %	44 %

Adequate inclinations for ceramic colonial roofing. Cerâmica Alves, 2017.

Ceramic roofing at Flavia's dwelling. Author's file, 2013.

Flavia suspects that the sales people from the building materials shop did not explain to them correctly the characteristics of the material and how exactly the roof should be installed. She believes that the ceramic roof is less durable, and because of that it gets mouldy very quickly. I wonder if the roof was installed with the wrong inclination. It seems to be a little inclined, much less than the minimum 30% required. Flavia says that after only three days of rains, infiltration marks and leaks already started to appear - a thermal problem linked with water infiltration.

Slate floor. Author's file, 2013.

Four cases presented spaces that were too dark because of bad natural illumination combined with dark tiles on the floor. Another four cases revealed overheated dwellings, and another three presented or will very probably present ventilation problems and consequently new complaints about overheating. Illumination and ventilation issues have to do with the implantation of the house on the plot and its solar orientation, together with the size, shape, position and material of the windows. A lighter colour for tiles would help to create a lighter atmosphere. The price of materials plays a

Glass roofing tile. Author's file, 2013.

fundamental role. Flavia's sister, who recently built her a new bedroom, used slate on the bedroom's floor, a material that is too dark and very slippery. She chose the slate because of its cheap price - she could not afford anything more expensive. The same thing happened to one of the bathrooms of the house, which presents a very dark colour on the tiles as well. It creates the feeling of a very stuffy and tight place.

Renata's dwelling - glass aperture located on the division wall. Author's file, 2013.

After having faced problems with natural illumination, people begin inventing ways for solving existing problems, or preventing them in new additions and renovations. Eduardo found a very intelligent, simple and cheap solution for the laundry from the D1 (see D1 on page 175). The laundry is covered with a *colonial* roof (ceramic roofing tiles, the same type that brought so many problems and frustrations to Flavia's family). Eduardo substituted one single ceramic part with a glass model. Located on the top of the house, it is exposed to daylight all day long. With so little effort, the effect on the space was remarkably positive.

Renata wants to prevent future illumination problems by installing a glass aperture on one side of the colonial roof which was recently installed to cover the future classroom where she will offer private lessons for local students. As it is located at the limit of the plot, and the roof is inclined to the front and the rear parts of the plot, the best place to open a window is on the side of the roof, facing the neighbour's plot, directly on the division wall. This interference would not be a problem, because Renata had already agreed about that with her neighbour. Besides the side aperture, the front door of the classroom will be made of glass to improve illumination. When she is asked about tiles and finishings from the rooms and kitchen, she thinks they are too dark.

Renata also mentioned that this part of the roof is new and was be reinstalled a little lower, independently of the existing roof. Since the roof will be low and the lateral aperture is only for light (it cannot be opened), I alerted her about the heat issue.

Window types. 1-Top-Hung steel window; 2-sliding steel window; 3-tempered glass sliding window. Author's file, 2013.

She justified her decision by saying that the workers promised to install some type of thermal isolation between the ceiling and the roof. She did not mention how she would protect the neighbour's plot from the water that will drain from her roof. The only informant that mentioned the use of gutters on limit walls was Cintia, who was also the only one to use asphalt membrane to protect slabs against rainwater. Cintia seems to be the informant who has most used more elaborate construction elements and solutions.

Top-hung and awning windows are the very popular models, with steel or aluminium frames. Although more expensive than steel, many prefer aluminium because it is "cooler" and more elegant. The symbolic value of windows made of aluminium is socially higher than a window made of steel, exactly as the houses with asbestos roofs are a symbol of poverty in comparison to houses covered by concrete slabs.

At the same time, tempered glass sliding windows without frames have also became popular and are also associated with a higher social position.

Normally, people resort to the conventional construction materials and elements that prevail in local building materials shops. Unusual ideas rarely take place, such as Eduardo's idea to improve the illumination of the laundry. Besides changing one single roofing tile for a glass model and confirming how well it has worked, he intended to install a real skylight to bring light to the corridor. After questioning him about the product, he said skylights recently started to be available at a famous chain of building materials.

> I can build it with tempered glass, or buy it ready in this building material's shop, at the Itau Shopping. I have checked. (...) you have many sizes, you buy for example, you buy, if they do not have the wider size, you close it a bit and adapt it, understand? If you want to do it with tempered glass, it is made to order. But they have the size you want (Eduardo, São Joaquim).

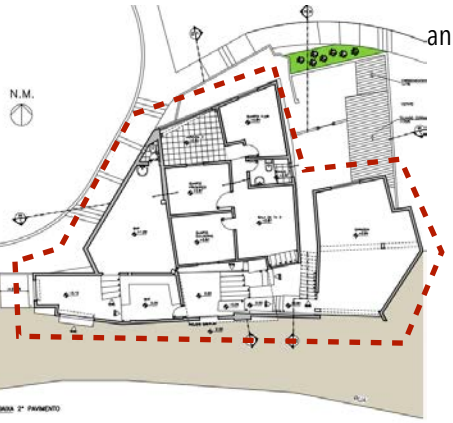
Skylight. Leroy Merlin, 2017.

4.3 GEOMETRY AND ALIGNMENTS

Complications including measurements and alignments are the third most common technical problem among the case studies of this research.

One of them is not really a technical problem, but a geometrical aspect of the dwelling, given the conditions of its implantation. It does not cause any damage to the house, but has deeply inconvenienced Cintia, who repeated more than once during the interview that the house was not "straight" - its walls are lopsided and do not present only right angles. I would not have observed this myself if Cintia had not called it to my attention.

Flavia's dwelling - detailed measurement.
Grupo MOM, 2015.



Flavia's dwelling - sketch. Author's elaboration, 2013.

This aspect does not actually cause any technical or spatial problems - it is a personal matter, the result of a comparison between the improvisation of the *favela* with the formal city and its regular buildings, symbols of something straight and correct. The housing units of Cintia's condominium were built occupying the total land, which has an irregular form. Cintia's father confirms this choice - he preferred to build lopsided walls in order to gain more space, rather than to have a straight but smaller house:

> (...) as the beginning here was badly made, too quick, automatically the construction continues like that, everything more or less lopsided. (...) the house is ugly because of this (Cintia, Vila N. S. Fátima).

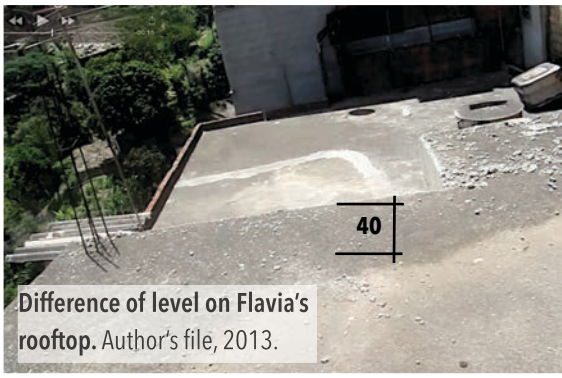
> The plot here does not help, because land here is very expensive. We have to use each small corner. We built out of plumb because we have to use all the space (Cintia's father, Vila N. S. Fátima).

Flavia's dwelling. The red arrow shows a small step in the middle of the corridor. Author's file, 2013.

Zigzagging walls bother dwellers in their everyday tasks. Occasional visitors might not notice that the walls are not straight, but the reality is actually worse than our impressions. Flavia's dwelling was the subject of other research done by architecture students from UFMG. The aim of the research was to prepare students to deal with informal settlements, teaching them the main principles of local surveys. The house was measured in detail and the result proves that most walls and rooms were not square, in comparison with my own sketches made by hand[7].

[7] As mentioned in the introduction, all drawings presented in the thesis are not a result of a detailed survey, but done by hand in the form of sketches.

The second reported problem has to do with the calculation of levels, which appears three times at Flavia's home. First of all, the house has rooms on different levels and therefore many steps to the door of each room. Somehow the workers were not able to build the new spaces on the same level as the existing ones. This aspect is uncomfortable for dwellers and especially for visitors, who are not used to that. Flavia's sister recalls that she had noticed such defects during the last renovation, but she did not say anything, thinking that it would be fixed with the tiles. Their wish is to have all the rooms at the lowest level, in order to have higher ceilings. The last bricklayer they consulted said that the task is not possible. Flavia and her sister, although lacking technical arguments, are still not convinced. They began to imagine a thick layer of plaster to have all rooms on the same level, so that they could have continuous floors without salient thresholds.

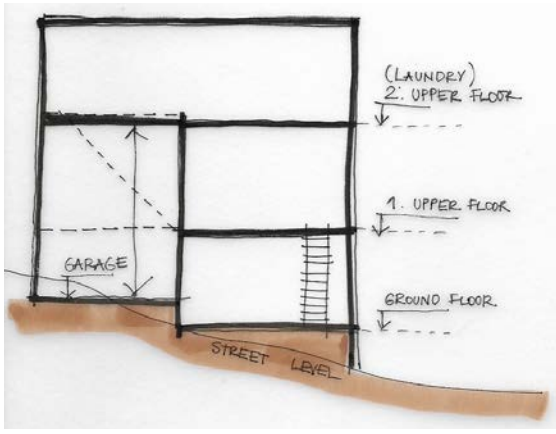


Difference of level on Flavia's rooftop. Author's file, 2013.

The second problem with the levels at Flavia's place has to do with her wish to unify the rooftops of the house itself and the garage.

For that she first wanted to build a concrete stairway, starting from the front part of the plot and accessing the unified rooftop, a space where she plans to have a recreational area for the whole family. After having accessed the rooftop of the garage through an improvised wooden stairway, I immediately noticed a significant difference of levels of approximately 40cm. However, they had not noticed it and had no idea how to solve the problem, either. Nevertheless, they clung to the idea of building the stairs, postponing the resolution for a later time.

Difference of level between garage and dwelling at Nely's place. Author's elaboration, 2013.



The worst solution would be to have steps. Flavia did not consider this to be a big problem, but it was a big problem for the family, as described earlier. Such a difference of levels was also evident at Nely's house.

Flavia's internal stairs. There is no landing at the corner. Author's file, 2013.

Curiously, the difference of levels also was found between the main house and the garage, reflecting two distinct moments of the building process.

Nely's husband says he would like to have bought both plots together (they bought them separately and at different times). He would rather have built a unique and direct concrete slab, covering both plots. I observed that Nely's husband understands it as a lack of integration between two different construction phases. The solution would have been to have built all at once.

A very common problem, already observed in other research and confirmed in this set of case studies, are stairs. Of 15 case studies, 12 were more than two-storey buildings and presented 18 stairways in total. Stairs ended up being an important topic, not only because of the space rationalisation and technical challenges they present, but also because the adequate and safe building materials and construction elements they, in theory, demand.

Stairs are particularly problematic for self-producers because they are the result of a calculation that must combine length and height, in order to fit the stairs into a restricted space in the house.

João's self-built stairway. Author's file, 2013.

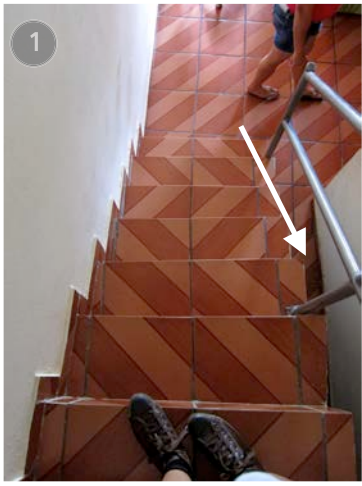
This calculation is trivial for architects and planners, who might count on applications for 3-D models, but not for self-producers and manpower lacking know-how, who mostly design and build *in loco*. *Battlers*' homes normally are not so spacious, at least in the beginning of the building process. Although most *battlers* always intended to have a second floor, to expand their homes or to establish an apartment for rent, the construction of the upper floor always remained uncertain - it might happen soon after the construction of the ground floor or it could wait months or even years. This means that the location and measurement for a staircase depends on the stage where the construction process is. In some cases, self-producers already know the exact location of the staircase and build the slab already with a hole, expecting, even without

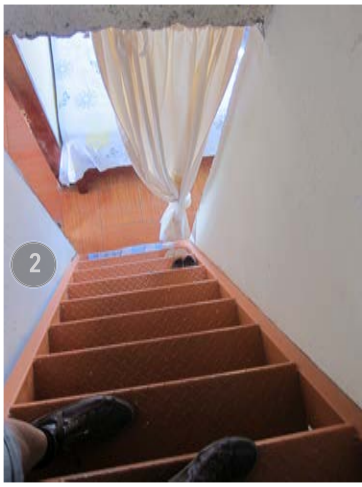
an exact calculation, that the staircase will fit inside the previewed edges. A common result is a very uncomfortable staircase - narrow, with too high risers and the treads not deep enough. All that happens because optimal stairs cannot really fit inside the existing hole in the slab. The builders have to fit the stairs inside, diminishing the width, height and depth of the steps.

> At Flavia's place, the internal staircase is very problematic. First of all, the stairs have no landing. People have to pay close attention to the corner, because the stairs do not fit. The steps were simply forced within the limited wall space. Also, when climbing the stairs into the living room, on the last step, people can hit their heads on the upper concrete beam because the space between the last step and the beam is not high enough for taller people. The family never mentioned the stairs as a problem, and they seem to be not at all concerned. As happens with infiltrations in the ceiling, people tend to take geometric problems in stairs for granted - "it is always like that". Among many plans for the future, the family do not plan to change the staircase.

At the enterprise of João at São Joaquim, the stairs also caught my attention. When I used the stairs to access the second floor, I observed that the risers were too high. When I came back and looked at the stairs from the front yard, I noticed that the height of the risers was a result of the construction methods used by João, who also does manual labour at the building site. I asked him to explain how he built the stairs:

> (...) it is super simple. In these shops where they sell slabs, you are going to buy - I forgot the name of that part there - you are going to buy the columns. The columns of the slab. You install, for example, you have 3m... 5.20m, you use the column to do a ramp, then you place the steps. (...) I did a small ramp. (...) But it depends on the finishings of the floor, do you understand? He uses the height of the bricks. Some have a little part inside and some don't. (...) I started from down, look, and then you do the ramp, and you start installing the little bricks (João, São Joaquim).





As we can see in the photos on the previous page, the risers are the result of the use of ceramic bricks horizontally positioned between two precast concrete beams. They are approximately 18cm high, which is too high for the risers. He closes the gaps between the beams and the bricks using waste of old bricks and stones.

Stairs at Carlota's place. 1-stairs from ground floor to upper floor; 2-stairs from upper floor to rooftop. The white arrow indicate the span. Author's file, 2013.

> Now, after you use wood here to do the finishings properly and then after you do everything standardised. You use one brick, here a bit of waste and keep doing the concrete mass, or you can use slag, which is more correct. (...) but at the corner you use slag. (...) And the mass... It was much [more] practical (João, São Joaquim).

João invented this method himself. Perhaps he has seen it somewhere else in another self-produced building site. Although the stairs are not comfortable and look like a collage of many different types of building materials thrown together, the creativity and the effort of João were remarkable. His technique has a logic and a fundament. If ceramic bricks were two centimetres shorter, and the precast beams were designed to support such bricks, the idea of assembling stairs *in loco* would work out very nicely. His concept of assembling stairs is inspiring.

In Carlota's case, the stairs are also interesting. At first sight, the house looks like it has problems with its spatial distribution. Upon closer inspection, we understand that the logic of space distribution actually comports with the household's needs within the available space, except for a problem of privacy on the second upper floor, where there is no distribution hall among the three bedrooms (check "Carlota's dwelling" page 180). In spite of that, the insertion of two staircases (one that connects the ground floor to the first upper floor and one that connects the first upper floor to the rooftop) is problematic.

Flavia's external stairway.
Author's file, 2013.

Nely's internal stairway.
Author's file, 2013.

The reinforced concrete ladder that connects the ground floor to the first upper floor has treads that are too short and risers that are too high. For some reason, they do not occupy the whole space, which leaves a narrow empty space between the stairs and the wall. This small span is insufficient to be used as a passage or even as a small storage space. If incorporated into the width of the stairs, it would be quite large. There is a very low concrete beam above the first steps that go to the rooftop. The classical problem of heating the head on the beam is repeated, exactly as in Eduardo's and Flavia's case studies. The stairway connecting the second upper floor to the rooftop is made of steel with a checkered steel plate. This one is even more uncomfortable than the first, because it is too steeply inclined. In both stairways, the handrails are not high enough.

Of 15 case studies, only two self-builders have chosen a material other than massive reinforced concrete to build the stairs. Independently, whether they are external or internal, the use of reinforced concrete is the rule. In many cases, concrete is used not only for the structure of the stairs, but also as a filling, so that the stairs are completely moulded *in loco* with concrete. They cannot be changed or adapted in case of mismatches. Once ready, they remain, even if they are uncomfortable for the users.

Normally bricklayers support the use of moulded concrete stairs over any other material. They say that they *"trust the material",* and many times offer a better price for their work if the client accepts the use of reinforced concrete. This happened with Flavia, who wanted to install metallic stairs to access the rooftop. The first problem was the price - metallic stairs were far more expensive than the ones made of massive concrete. Secondly, she was unsure about the maintenance and durability of the metallic parts. The bricklayer took weeks to finish the construction of a massive concrete stairway. He needed one day to assembly the formworks, another to deal with the hardware, another to fill the forms in with concrete, which then needed another week to dry. It took yet another week for him to come back and take out all the wooden formworks, since he did the job during some breaks in another building site. After all this process, the stairs still had no finishings or handrails. And because it was located outside, it remained unsafe and vulnerable to rainwater. The bricklayer still suggested the use of porcelain tiles or granite to cover the treads, but was unable to convince Flavia that those were adequate options.

Contrary to the other informants, Nely and Carlota preferred to use metallic stairs. Nely decided on stairs with a steel structure and checkered steel plates for treads. According to her, other than steel, the preferred alternative would have been massive reinforced concrete stairs, covered by ceramic tiles, which she found too slippery a material for steps. Although she chose the metallic type, she finds it too noisy and wants to substitute it in the next renovation. The family will then have moulded reinforced concrete stairs, but Nely will try to find non-slippery tiles to cover the treads. Carlota also decided on steel stairs to go to the rooftop, with a steel structure and checkered steel plates as treads. They did not choose the stairs, but got them from someone else and simply installed them in the empty space they had.

Louis' building site.
Author's file, 2013.

4.4 Structures and dimensioning

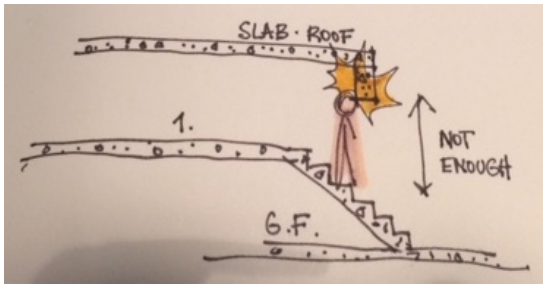
When I started the fieldwork for this research, I was expecting that structural problems would be more frequent, or at least more clearly visible. Of course, I cannot assure that this or that structural element has the precisely right or wrong dimensions. This judgement cannot be made in one or two visits, nor did I have documents that would indicate which kind of wrought iron bars were used or which type of cement. Besides, I did not have access to all the workers who have built the structures - even the homeowners no longer know exactly who has built what. My most important observation regarding structures in the context of this research is that I have not seen cracks or unsafe situations caused by under-dimensioning. On the contrary, I saw many concrete frames which I evaluated to have been over-dimensioned, which can also cause cracks, given their overweight. In many cases, beams seemed to be too thick and there were too many columns supporting relatively lightweight slabs. Louis built six 20x30cm concrete columns distributed along a 10m length. The distance between the columns does not follow any logic.

Over-dimensioning happens not only in structural frames but also in foundations, mainly because people do not know exactly the type of soil they are building on and erroneously believe that heavy foundations assure safety, maintaining the house firmly in the soil. It is my observation that many self-producers do not understand that the decision over the foundation type depends on the type of soil, and that this can be determined only by a soil inspection. Many people even know that this is a service offered by expert professionals in formal building sites. Of course, I could not see the foundations of the dwellings I visited, but I was able to collect interesting reports, which help to illustrate this situation. Cintia's father said that each foundation column of their condominium is about 12m deep and 60cm in diameter. Also, each one has a fundament that is more sturdy than the body of the columns. He estimates that he used more than five-thousand cement packages, equivalent to about 250,000kg of cement in the whole construction site since 2009, which would cost today around €24,000, just for the cement. These estimates were all confirmed by Cintia.

Self-producers normally use the classical concrete frame as structural system, with square section pillars and beams - the predominant structure type used in formal building sites. Informal building sites, in *favelas* and in peripheral neighbourhoods, are reproductions of formal ones. There are no big differences among these apparently two different worlds.

Crack in the laundry of Flavia's dwelling. Author's file, 2013.

Of 15 case studies, there were no serious cracks evident, with the exception of one at Flavia's home, in the laundry. Flavia and her sister report, nevertheless, that the crack appeared during the construction of the *Avenida do Cardoso* (see page 141), that passes just behind the house. Flavia suspects that the structure of the house was affected by the shaking that resulted from the intense land development necessary to open the avenue. Although quite wide, the size of the crack remained unchanged, and no new cracks have appeared since then.



Geometrical problem in stairs. Author's file, 2013.

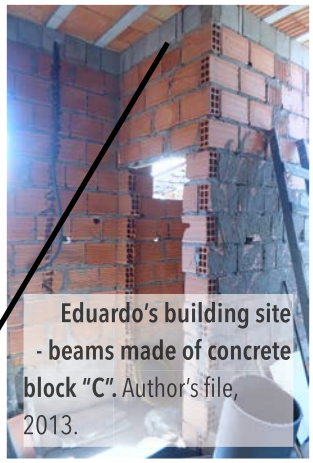
Another small problem that involves stairs and structural measurements occurs when there are very low concrete beams over the first steps of the staircase. People can hit their heads on the beams while walking up the stairs up or while coming down. This is the situation I found at Flavia's, Eduardo's and Carlota's dwellings. According to Eduardo, this was a unique defect of his house. He has used different types of beams in each dwelling. In one housing unit, the beams were massive, made of reinforced concrete, and in the other, they were assembled in loco, using type "U" concrete blocks.

Stairways from Flavia, Carlota and Eduardo. People can hit their heads on the beams. Author's file, 2013.

Obviously, self-producers do not make any structural calculations for their constructions.

> (...) this belongs to your field, engineering, because when I could not afford to hire an engineer to do something supervised, we did like this, even because this staircase was done afterwards, but the right thing... Today I see that the right thing would be to build a

Eduardo's building site - massive concrete structural frame. Author's file, 2013.



Eduardo's building site - beams made of concrete block "C". Author's file, 2013.

column here. If I do a column here, to strengthen here, I could demolish that, right? (Eduardo, São Joaquim)

A serious and dangerous structural problem occurred at Levy's enterprise. A complete wall of the third and last floor, made of perforated ceramic bricks, fell down on the neighbour's backyard because of strong winds. It happened twice. The first time, the bricklayer had built the walls without a structure frame, only stacking the bricks with plaster. His intention was to build the columns and beams afterwards. Levy called his attention to the problem, but the bricklayer said he would do it the next morning. During the night the wall, 14m long and 1.5m high, tumbled down. After one month, the same wall tumbled down again. The second time, two concrete columns also collapsed together with the brick wall. By this time, the wall was already complete, and was 2.60m high. The roof of the neighbour's house and a bicycle were damaged, but luckily nobody was injured. Levy had to indemnify the neighbour for the damages, and nobody talked about it since.

Especially because of this episode, I asked Levy what his attitude would be after his graduation as civil engineer - if he would then provide structural calculations for a possible second enterprise. Displaying an interesting trust, he insisted that the calculations are actually not fundamental to the safety of the building site, but serve the purpose of decreasing costs with structure dimensioning.

> As an engineer I will have to calculate. It is a technical responsibility. For example, if my building falls down, Christ's sake, I get prosecuted. You as a judge, you listen to my story. If the guy is a bricklayer, he built without knowing what he was doing. If an engineer does that, if he makes a mistake, knowing about the topic, it is different. (...) I will calculate because of that... and because you avoid extra costs (Levy, Vila N. S. Fátima).

4.5 Security in the building site

Safety in building site was not at all a trend topic among self-producers. Still, I decided to expose my own observations on it, given the importance of safety for self-producers and construction workers.

In general, I found all the building sites, with the exception of Renata's, which is managed by Oliver, very unorganised, creating a high risk of injury because of remnants of iron bars, metallic wires, stones,

tiles and ceramic bricks. Besides, since the building processes are not continuous, windows might have only the frames and no glass, slabs have no parapets, and stairs no handrails or parapets, either. People take this for granted and do not seem to feel unsafe or inconvenienced. More than once I saw children playing in unprotected places, something that gave me a terrible felling of insecurity. At Levy's enterprise, there is no front gate and people have free access to the common parts of the building, including the last floor, which is used by the tenants to dry their clothes.

Levy admits he could have provided more security for the building site, but at the same time claims that this was not his priority. His objective was, above all, to finish the basic parts of the three-storey building - the structural frame, the internal and external walls and slabs, as well as everything related to the internal facilities of the flats - doors, windows, bathrooms and kitchens. The idea was to rent the flats soon after their conclusion, even without finishing the common spaces of the building. As previously explained, Levy depended on the rentals to keep the construction process going.

Insecurity in building sites. 1- Cintia's bar, stairs without handrails. 2-Levy's building site. 3-Levy's enterprise, Third slab, without parapets. Author's file, 2013.

4.6 Finishings and Building Materials

Popular building materials shops in Brazil do not offer a wide variety of building materials for basic construction - ceiling, division walls and structure. Self-producers all use more or less the same products and construction elements. When we look at building sites located in different parts of the city, in low- and high-income neighbourhoods, we realise that they do not differ much. All over the city we see a large number of massive reinforced- and precast concrete slabs, the latter filled with ceramic perforated

bricks. We also see massive reinforced concrete beams and columns, moulded *in loco*. Division walls are always made of ceramic perforated bricks, which have to be broken by bricklayers to allow sewage, water and electric piping to pass through. Ceramic roofing tiles with wooden structures tend to prevail in middle- and higher-income neighbourhoods, except for some examples of contemporary extraordinary architectural shapes, where flat surfaces prevail. In contrast, metallic roofs assembled with zinc tiles and supported by galvanised steel profiles and uncovered plane slabs (waiting for the next floor) are predominant in low-income neighbourhoods where, decades before, we could only see small huts covered with asbestos roofing. Metallic structures for residences are still something rare and therefore more expensive, even for higher-income residents, as well as dry construction techniques. In the heteronomous housing production field, even when something different from the usual - concrete frame and ceramic perforated brick walls - is proposed, their adoption often depends on the game played by construction companies, master builders and civil engineers.

Concrete structures and ceramic brick walls prevail. Author's file, 2013.

On the one side, the predominance of the use of reinforced concrete in Brazil for structures, in both formal and informal building sites, was socially constructed from a network of private interests, which have pressured the construction industry with their powerful lobby[8]. This has to do with the absorption of a vast unqualified labour pool and the maintenance of a very precarious working class, as well as the Brazilian *ralé* (Souza, 2011). Cement, sand and stones are easily transported, and their handling does not demand any special skills or qualifications. On the other hand, since 1850, brick masonry has been the most used construction technique in Brazilian urban centres for division walls.

Since the beginning of the 20th century, most buildings have been made of masonry, which means that it took about fifty years to replace local vernacular construction techniques, which used mud walls and *pau-a-pique* (Santos, 2008).

[8] To understand the details of the network which built the hegemony of the use of reinforced concrete in Brazil, it is recommended the work from Santos (2008), entitled *"A ARMAÇÃO DO CONCRETO NO BRASIL - História da difusão da tecnologia do concreto armado e da construção de sua hegemonia".*

Most common building materials in self-production

massive reinforced concrete slab
precast slab, fulfilled with ceramic bricks
colonial roof (ceramic roofing tiles with wooden structure)
tempered glass (windows and shower)
massive concrete stairs
porcelain tiles
ceramic tiles on floors and walls in kitchens and bathrooms

As we have already observed in the presented discussions, building materials have come to my attention because of two different aspects: the first has to do with the technical characteristics of building materials, regarding their durability, flexibility and applicability. The second is related to the symbolic value these materials display and the consequent possibilities, preferences and choices taken by each family. Much more than because of their technical performance, people tend to choose building materials to express their taste and to display their social position. Therefore, the choice for one or another building material is more related to the symbolic value they carry than by their quality or technical advantages they have.

Concrete slabs, brick walls, tiles on the floor and windows with aluminium frames imply security, durability, cleanliness and abundance. Nevertheless, it is very important to underscore that, although strongly guided by symbolic power, people's choices in building materials are also determined by their consumer power based on their resources and salaries.

The choice of building materials is but one of the social fights of *battlers* against their own limits. They (and the previous generation) are those who have escaped from poverty and all kinds of privation that poverty entails. The old times of shortages saw dwellings and local urban environments as the scenario, which remains in people's memories and of course deeply influences their choices.

> I am using only aluminium, to use cool things, to do it cool (Carlos, Jardim Canada).

In general, building materials were not an important topic for informants. In contrast, the type of the slab was always recalled. I observed that people see it as a priority, because they need to cover the house before they can move inside. Finishes on walls and floors are, most of all, a reduced priority because of the costs. Rarely do self-producers choose a more expensive type of material because of better quality. Simple painting prevails on walls, both internal and external. To save time, many informants did not plaster the walls with fine mass or gypsum, but have sanded them, used the so-called "*selador*", a water-resistant type of finish, and then painted them. In bathrooms, kitchens and laundries, self-producers use tiles on the walls, at least at the sink area.

> Many times, you install very bad tiles, inferior, ... because at the time, many times we said - Ah, we cannot buy that, because that is cheaper... and then you regret it, because you see the difference. Here is the entrance, living room, kitchen, normally where you most walk, the tiles get spoiled. Tiles cannot be bad. They have to have quality, because maybe you will pay for a cheaper one, and it will be more expensive because you have to take them out. So, it cannot be. There are things that cannot be... Pipes as well, if you install tubes inside a wall, and assemble the hydraulic part with bad quality pipes, you have to open the walls, what is very complicated - mainly bathroom, tiles, kitchen - and to exchange pipes. So, there are things that there is no price. They are economies which do not work out. You have to pay attention on that. Tiles, hydraulic parts, tabs, because you have to change, so, in the house up there, I had to change tiles. Actually, at the time I could buy was that, but if you think, when you are going to build again, you save more money and pay more expensive, because it is not worthy (Nivea, Pindorama).

In essence, self-production has become not only a fundamental strategy to face the Brazilian housing problem, but also a significant profit generator for the industry of building materials and construction elements. From their side, it seems that it is profitable to keep allowing self-producers to make mistakes and redoing the construction. *Battler* self-producers are immersed in a vicious cycle where they unconsciously work to maintain a system that is exploiting them. Informal building sites feed the greed of the formal market.

As reported by the Brazilian Association of Building Materials Industry (ABRAMAT, 2010), between 2005 and 2009, the sales of building materials rose 52.5%, reaching R$17.7 bn (almost €5 bn). The consumption of cement reached more than 50 million tons in 2009, and from 2003 to 2010 sales expanded by almost 50% (ABRAMAT, 2010).

5 MANPOWER AND KNOW-HOW

> Civil construction workers predominantly are from a rural origin and have in civil construction the main access to the urban labour market. Turnovers over many different construction companies are common. Such instability is one of the main characteristics of this type of job. It collaborates to reduce the possibilities of professional training directly at work and, obviously, to increase the difficulties of social rise through a career (Santos, 2008, p. 73, my translation).

Considering that around 70% of the building space in Brazil is self-produced, one question is, who built those spaces? And under which conditions? These are questions that come to our mind when we read the testimonies of the *battlers* in the interviews for the fieldwork. Who are the building site workers? What kinds of working relationships have been established? Trying to respond some of those questions, I first propose to bear in mind that

battlers hire *battlers* to work on their building sites.

As Gilbert suggests, the informal sector is relatively easy to define. The informal worker is complex, because working relations are mixed. As the case studies of this research confirm, "the construction worker at a formal building company will do freelance work in his spare time" (Gilbert, 2004, p. 36).

Normally there are no working contracts or timelines to ensure scheduling and logistics. Many self-producers have written working contracts themselves, by hand. Cintia elaborated that she herself wrote a working contract, emphasising three main points: what must be done, how long it should take, and how much money the work would cost. In her case, she established those points in accordance with the team of building site workers led by Gabriel, a local bricklayer whom she has known since childhood. They agreed that he would be paid weekly, and that payment would depend on the conclusion of each task and not on his daily working hours. If no work was done, there would be no payment. This method is similar to what Flavia decided upon for one of the many building phases she went through, with the difference that she has paid the manpower after the conclusion of a whole process. Once, a bricklayer sued the family, arguing that they had not paid for his services. The judge supported the family against the worker, because it was spelled out in a handwritten contract that the worker would receive his payment only after having finished all the work, which did not happen.

The two main methods of payment preferred by self-producers are that the workers are paid either by week or by the so-called *empreitada* - after the completion of a whole process, which usually includes multiple tasks. Some *battlers* used to divide the payment into two parts, the first at the beginning of the job and the balance upon completion. However, most informants reported that this method was insecure, since it presents a risk of spending half of the money in advance without the work being done, leaving the self-producers at the mercy of the labourers. Working in the informal construction field is by nature insecure. Hiring manpower under such conditions is equally uncertain and risky. Cintia prefers to hire workers by the week. According to her, an *empreitada* would give too much "space" to the team of labourers. We can also imagine that a weekly payment might be more attractive to the workers, since they will have some cash in their hands on a weekly basis rather than having to wait until the project is completed. Thus, weekly payments are more attractive for workers and at the same time more secure for the home owners, who are able to verify if the workers are able to do the job and "deserve" the payment. These comparisons demonstrate to some extent how the informal labour market functions.

Another common practice among informal building site workers, which is also beneficial to self-producers, is to use recently unemployed workers while they are still insured. In such a case, workers effectively receive a double salary - the unemployment insurance and an informal extra wage "off the books", while they do not have a new formal job offer. Cintia was really relieved when she heard from a neighbour that Gabriel, his team leader, has lost his job and could work for her part-time with the help of a friend. For Cintia it was a fortuitous coincidence that she had just managed to save a little money, which turned out to be exactly the necessary amount to pay him. From one week to the next, she learned that Gabriel was available and immediately bought building materials so that he could begin working. However, like most informants, Cintia hired Gabriel only for the basic construction - concrete structure, brick walls, electricity, and sewage piping and covering. Finishes and painting would be postponed until a future date.

Normally, informal working contracts do not include sick leave. If someone does not go to work, regardless of the reason, he does not get paid. Gabriel missed work for one week because he developed a serious stomach ulcer. Cintia told me that fortunately Gabriel did not have to go to surgery, but had to take daily medication and stop drinking, which he does regularly, even while working at the building

site. In spite of that, Cintia reports that she is very happy with Gabriel's work. She says he is a professional bricklayer, although he has had no formal education.

In contrast to Cintia, Louis hired a very experienced master builder, José, an old acquaintance of the family. The old man works as an autonomous worker and loves to talk about his experiences. Louis was helping José at the building site, since he was unemployed at the moment. José became a bricklayer through a mail-order course during the 80s. He actively participated in the whole building process, not only with manual tasks, but also by making suggestions about internal divisions of the addition, thereby helping Louis.

Of 14 informants, five had "formal" working contracts with their labourers. Another three had the help of friends, which obviated the need to have working contracts, as their relationships were based on trust. Another two primarily worked on the building site as self-builders and helpers (see table *Summary of working relations*, in Appendix page 318).

The case of Oliver is unusual, but offers a different perspective of the problem, because he turned himself into a master builder who works for potential self-producers from the neighbourhood, overseeing small renovations and constructions. One of Oliver's main complaints is that there is a general lack of initiative among building site workers to find solutions or come up with new ideas on how to do this or that task. According to Oliver, there is a serious lack of competent manpower. Oliver's wife, the director of a public school with 30 years of experience, confirms that the construction field does not invest in the training of manpower.

Ferro (2006) understands that it is important for the economic chain in the construction field to maintain the characteristics of the Brazilian manpower as they are in order to absorb poorly qualified workers. This mechanism is the result of pressure from the manpower reserves, an army of unqualified workers who arrive in the big city looking for better working opportunities.

> Like the structural rabble, they constitute a "structurally" cheap workforce, whose wages have never included the costs of formal housing, although they have managed to achieve some micro-accumulation. Self-production of space in a Brazilian metropolis thus ranges from extremely precarious situations to homes

> and neighbourhoods that over time have become much better than public housing or formal real estate (Kapp & Baltazar, 2012, p.4).

For Oliver, an autodidact professional, it is hard to accept that young workers are not used to reasoning something out or finding innovative solutions, but are content to replicate actions uncritically. At the building site we see that workers are accustomed to copying technical solutions without questioning if this or that decision is adequate for a given situation. As a young overseer of building sites, Oliver is frustrated by the fact that everything has to be explained in detail, independently if there are formal projects to be followed. On the one hand, workers are not able to come up with solutions themselves, and on the other, they are not able to comprehend solutions when they are already designed. Oliver complains that the average worker is not able to imagine or to calculate how many concrete columns a simple front division wall should have.

> (...) We see everywhere in the news, that the companies have to prepare the employees, from interns to technicians, because there are no qualified workers. We live in a country with low education levels. When you see a company, it has technology, machinery. The entrepreneurs always say that it is necessary to invest in the employees. So it is, but not in this field. (Oliver's wife, São Joaquim, about the construction field).

> There must be a foreman. It looks like they like... I don't know if it is because they do not want to have the responsibility afterwards - "I did what they told me to." I imagine it is because of that. They also have no interest at all in qualifying themselves (Oliver, São Joaquim).

Most workers who worked for Oliver during the last months of 2013 could not even order building materials because they were not able to calculate the square meters of a room. This situation happened with Oliver many times. As we confirmed with the most recurring technical complications, stairs are a big problem. In Oliver's opinion, the reason is simple:

> (...) stairs are always problematic because... stairs is math (Oliver, São Joaquim).

Ironically, informality demands from people initiative and pro-activity. In the construction field, this means the responsibility and knowledge to take decisions. Oliver also called my attention to the problem of drugs and alcohol at the building site. He suggested that alcohol is being replaced by crack

- a cheap and more addictive drug. He had this experience with another bricklayer with whom he had just begun to work. After receiving his daily payment, the young man came back and asked Oliver for another small amount to cover some "urgent" expenses he supposedly had at home. Later on, Oliver found out he was addicted to crack.

Battler self-producers do not do obligatory work at the building site, but do work occasionally. Most informants for this research sometimes worked as helpers, directed by a master builder or a simple bricklayer for smaller tasks, like carrying building materials, digging holes and preparing plaster or concrete. They do that to move the building process along faster and to save some money by avoiding hiring a helper. Many self-producers work on weekends and holidays or during their vacation time. Some of them also take time when they are unemployed to work on the building site to move the building process along and to do something useful.

Oliver decided to reinvent himself as a build master after his profession as a lathe operator disappeared when the Chinese arrived and took over those jobs. As he was building himself a house, he decided to take small jobs related to construction, such as small renovations, painting and general repairs for people from the neighbourhood who had no experience in self-production and felt too insecure to start a process.

> My profession does not exist anymore. The Chinese arrived and took over the market. Then I had to do something else... (Oliver, São Joaquim).

He started working as a kind of master builder, leading a team of workers whom he distributes among two or three ongoing building processes. His price is cheaper than the price of formal companies. He manages the building sites completely - designing, calculating building materials, hiring bricklayers, painters and helpers, and also doing part of the work himself. One of his current clients is Renata, who lives on the other side of the street. Renata preferred to give Oliver the job to manage her renovation, as she had done other times. She did not know whom else to trust, since she needed quite complex hydraulic repairs. Renata had faced many problems with manpower before, and complains about elementary defects of the house.

> You pass your hand on the walls, you see that the house is not straight. I had no proper bricklayers, there were people, my husband wanted to do everything again because they could not find a good bricklayer. Then comes the waste of material, through the manpower. Who arrives will see it very beautiful, it's fine. But if you pass your hand you see, very badly made here (Renata, São Joaquim).

Oliver is quite satisfied with his new occupation, and Renata is happy having Oliver as her master builder. There were many times in the new business when Oliver had to do the manual labour himself because he could not find any available manpower. As a grandfather of three children, he complains that he is tired and is no longer in a physical condition to do manual work.

> A work like this, gives me R$8,000 free. I do it in 45-50 days, paying everything, manpower, as I do only a few things, it is worthy. And then you take a bit here, a bit there, you earn a bit of money. I do not know if... now it happened to have 3, 4 ongoing works, but tomorrow I do not know if I will have this volume. But if tomorrow works with lathe appear, I keep doing, for me it is no problem. It is the Brazilians' lives. Try to explain it to the Germans there.... it will be difficult (Oliver, São Joaquim).

Another informant who also used to do manual labour at the building site, but later worked as a helper on their own site, is Nely's husband. The family hired a bricklayer who would come to work each Saturday. They cannot recall the precise duration of the complete building process of their house, since all of it was done only on weekends. Although Nely's husband worked primarily as a helper, he did some things himself, such as foundations and some walls. He decided to hire other people to do the more complicated tasks, like assembling the hardware of the concrete slabs, for example. Nely's husband was in charge of the management of building materials and manpower. In this job, he learned a lot with the workers. Sometimes he asked for employment as a manual labourer at formal building sites in order to make extra money and to acquire some knowhow, believing that this knowledge would serve in the future when they started their own construction process. Nely has never helped with the manual labour, but has contributed with her income as a cleaner.

Nely's role in the self-production of the house was a parallel job. She was the one who had to make sure that everything would work out with household expenses, bills, the children's education, and all the

logistics the household entails. The manual labour was reserved for her husband, along with a contribution of economic resources.

A similar sort of arrangement, with a slight twist, was agreed to between Renata and Oliver. While he was the manager of the building site, she had to pay for it. She took out a *Construcard* loan to pay for building materials and used her savings to pay Oliver and his team.

> And then I talked to Oliver, it was he who planned for me... (...) you cannot find someone who would work properly. He arranged this work to do, and afterwards he had another [project]. And then people come here and think it is easier to work like that. Because you do not need to look for a painter, a bricklayer, he does everything for you. So, for someone today, it is a good working field. Can you imagine, I leave my tasks to go the shop, buy everything, mainly my case, I do not have a husband. Because when a man can do this for us, it is different. But if it's me alone, how am I going to do it? (Renata, São Joaquim)

It is important to recall that working relationships such as that of Renata and Oliver, which are very common between other informants and the manpower they hire, are understood as informal work according to formal architectural and civil engineering standards. On one side, homemade sketches are not assigned by professionals with technical responsibility. On the other side, the municipality is also excluded from the processes. It neither approves the constructions nor inspects them, which eliminates another expense for self-producers. They do not pay the municipality's fees, which are numerous and expensive, regarding the approval of architectural projects and the inspection of building sites. In this sense, informality helps people save money.

Self-producers who live in regular plots normally pay the IPTU (Urban Land Tax) and, many of them, the social security for the workers. Most inhabitants of *favelas* do not pay IPTU, since their plots do not officially exist (i.e., they are not recognised by the municipality). Since they have no ownership titles, they are not the official owners of the land. This is a very controversial topic, because their possession is legitimised by one of the principles of the City's Statute (2001) through the instrument of Land Tenure Regularisation.

Similarly to Oliver, and inspired by him, his neighbour João built most of his house alone. He wanted and needed to have his own house back in the 80s, but was too insecure to start building. Oliver recalls their conversation decades ago. They have been neighbours ever since.

> Oliver: Brother, take it and do it.
> João: But I don't know how to do it.
> Oliver: Learn it!

He chose that path because it was never feasible for him to pay for the work of others from his own income as a wall painter. He preferred to do the work himself, even though he had no idea how to do the job in the beginning, when he started building the family home on the top of his mother-in-law's house.

> Because if you pay R$100 to a bricklayer while you also earn this per day... there is no way (João, São Joaquim).

For João, on the one hand, the decision to self-build the family home was a matter of survival. As with all the other informants, rent is an excessive burden on the household budget. On the other hand, the decision to self-build for rental purposes was an economic one. It was driven by his plans for the future after so many decades of hard work. He was worried about the rent and the security of his family.

> I thought: I will build there some huts for renting to guarantee my retirement. (...) And then afterwards, I learnt how to build brick walls, and then how to plaster. I was kind of in the scheme, and they taught me how to install the slab, that sort of thing, and God blessed us (...) So that, nowadays, after that I have learnt how to work as a bricklayer, painting, electricity, I install tiles, but you know, I did not know everything, it was all achieved, driven by a big need. (...) when I learnt, the bricklayers who taught me, who instructed me, I always asked them a lot, I was always very curious - "how to do that, how to do this", and people explained it to me. (...) I have a brother-in-law, he is a bricklayer, he is a real bricklayer, he builds shops and everything. I always asked him how to do this, how to do that. And he always explained it to me. Like, which steel should I use in each column, the weight, and so on, he always explained everything to me... the type of cement... (João, São Joaquim).

By now, it is clear that the issues surrounding *battlers*' manpower have a lot to do with the type and the level of education that this population has access to. The precariousness of basic education is exposed by the incapability of building site workers to do simple calculations, take technical decisions on the building site, and organising their working hours and routines. As described by Santos (2008, p. 21), the semi-training received by the average building site worker in Brazil presents a kind critical reflection, which "is more pernicious than ignorant" (my translation). Conversely, the atmosphere of Brazilian formal building sites, which is equally and automatically reproduced in the informal ones, influences manpower towards conformity and acceptance of reality without questioning or resistance.

All this has caused a great stress for both sides, besides huge losses of material and non-material resources for homeowners, who also, to some extent, have also taken their losses for granted as "normal" and "expected". It has been common that very soon after the conclusion of a building process, infiltrations start to appear and finishes start falling down. Also very "normal" is the abrupt interruption of a building process because of problems with timing and logistics from the manpower, who normally take on more than one job at once. In one day, a bricklayer might start the installation of a precast slab, but does not finish the job. As we saw previously, the internal space of the building remains uncovered, receiving rainwater for weeks, damaging the floors and walls even before the dwelling is occupied.

Problems with the assiduousness, compromise, and costs of the manpower were at some point related by all informants, but especially stressed by Flavia, Levy, Hugo and Oliver. Of course, the unhappy experiences reported by those informants do not reveal or explain all of the problems with Brazilian manpower. However, these situations reinforce the idea that the problems with Brazilian construction manpower are actually problems that result from Brazilian social inequality, which restricts access to education and professional preparation for those who cannot afford it. At the same time, the lack of well-prepared workers increases the price of the best ones, which is also a major problem for self-producers.

> Because, in deed, in deed is like, manpower was always expensive. How we earn little, we cannot choose the best bricklayer. We cannot come to the best bricklayer, the guy charges R$200 by day, we cannot pay this. I follow recommendations. Someone tells you: "Fulano works nice, and charges x." We go for this person. If the person begins and we see that the person does not work well, we change, you know? We lost a lot because of that. Until today, it happens, in many construction works, in big ones too, it happens, this is normal in construction work (Hugo, Jardim Canada).

At the time of the fieldwork, Flavia was trying to start building the new stairway to access the rooftop. The stairs would connect the ground floor to the rooftop (on the first floor), in order to transform it into a recreational space for the family. She had asked Robson, a bricklayer who used to live in the neighbourhood, to do the work and he had agreed to do it. The problem is that he had agreed to start the work in May and by September nothing had started yet. He did not return her phone calls and she had to look for him at night at his house, to try to understand why he had disappeared. He tried to justify it by saying that he was still working for another family, and could not just leave the work

undone. He said that the owner whom he was working for had repeatedly asked him to do new tasks and he felt embarrassed to say no. As a consequence, all the logistics he had planned for the work at Flavia's and for the sequential jobs he might have had were simply lost. Although he said that he did not want to leave tasks undone, he did exactly that with Flavia. After a sincere conversation, he finally started building the staircase, but after having assembled the wooden formworks to receive the concrete mass, he disappeared again for another three weeks, again claiming to be involved in more than one job. All the wood Flavia bought to be used as formworks remained unused for weeks and was ruined from exposure to the rain. Robson also faced difficulties in finding two helpers to help him complete the job. Even after having made excuses to Flavia, along with new promises, the stairway was not begun until the end of September and the formworks were taken out only in November. At that time the handrails were not yet installed, nor were the finishings done.

The high rotation of building site workers damages building processes. The work has no continuity and many times can lose a logical sequence. Flavia has worked with about ten bricklayers since building her first house in the 70s. In the construction of the second floor, at least three different bricklayers have passed by her building site. She said one of them was very nice, but could only work on the weekends and his days off, which was too little work for Flavia's demands. She wanted someone who could work all through the week.

Levy experienced a similar problem. The first stage of the building process (foundations, columns and ground floor internal walls) was done by different bricklayers. Each part was built by a different worker, not because there was a restricted division of labour in the building site, as happens in formal building sites, but because Levy could not manage to find people to continue the work. There were constant interruptions. For the first floor, Levy decided to hire a master builder who was supposed to supervise a team of workers. He had to invest more money, but he thought it would be worth the investment. Among the many problems Levy faced with manpower, he mentions their lack of technique and meticulousness, as well as a kind of arrogance, as they ignored Levy's preferences and desires. Many times he had to ask them to re-do tasks, which resulted in many added and unnecessary expenses. In the end, he admits to having left many tasks not completed. He recalls that he had positioned the location of the concrete columns himself, but still the bricklayer who assumed the task afterwards, located some of them incorrectly. As a result, the divisions of the ground floor were lopsided, as was the

entire building, since all internal brick walls follow and depend on the location of the concrete columns, and all floors use the same partitions and are built one on top of the other.

The negative experiences of Hugo were similar to those of the other two informants. His testimony demonstrates how people suffer because of those problems. They put all their savings into the dream of having their own house, only to be continually sabotaged by the ineptness of the manpower.

> I had to break half of the wall once, because I paid a guy to work here per day. When I arrived, the wall was lopsided. Per day! I came to him and I told him: "You don't need to come to work anymore." Because I paid the guy to do something I didn't know how to do. I come home and everything is wrong. Are you going to hire a person like that to work for you? No. I pay him for something you cannot do, and he does it wrong! And then I demolished. I hired another one, he did it again, correctly. (...) And if you think, well, we even don't know how much we have spent, so much we have spent. All the time. If we calculate everything we have no idea. (...) The hydraulic part, as I was working at the building materials shop for long time, I had an idea how to do it and I did it. Still, I hired a guy to transfer the water reservoir that was here on the floor and to upstairs. What did the guy do? When the water arrived, it exploded! It went out over all the walls here. Because the guy started to cut the pipes in order to transfer them, but did not finish to do it. He did not change them. He left the pipes where they were. Then she [his wife] called me, when she came back from work, to wash the dishes... There was water all over. When I arrived here with him I could not believe on it. I paid him a full day of work and he did what he did. In the next day, as I knew how to do it, within two hours, I did myself, took the reservoir, changed, went there, did all the piping (Hugo, Jardim Canadá).

Contrary to Flavia, Levy and Hugo, who were very much dependent on hired manpower to raise their buildings, Oliver combined self-building - he did a lot of building site tasks himself - with self-producing. He counted on the help of bricklayers, painters and electricians to do the work he could not do or had no time to do when he was still working as a lathe operator. In his opinion, there were too many job offers (in 2013) and therefore people simply did not care about doing a good job. As he previously mentioned, Oliver was tired of building site work and dealing with incompetent manpower, and gave the work to Gilberto, the bricklayer who used to work for him in his own house.

> He is complicated, but he is so, he is a very nice person, trustful, humble, hard worker. If he works by contract or by day, for him it is

> the same, there is no difference. He needs to be supervised... The unique advantage is that he is trustable and when I need him he is there. For levels he is good. On plumbing he is good. For walls he is fantastic. But for finishings... My Lord, there is no way. And I got no one who does finishings (Oliver, São Joaquim).

According to Oliver, Gilberto is a typical example of a poorly-educated bricklayer. Gilberto has a very low level of education (possibly not more than six years of school), is extremely humble, but with no will or motivation to learn, and maybe has learning and reasoning difficulties. He does not show any level of autonomy or pro-activity. Very often he makes mistakes, even about his price for a job. His intention was not to take any advantage; he simply did not know how to calculate how much he would earn after a certain amount of days.

> O: Gilberto, there is a problem, this does not look straight. We are going to start from the threshold of the garage and leave the difference there at the gate. Do you understand Gilberto? You are going to use the parallel line. Look, that the plot opens a bit. It does not matter, you install the tiles according to this direction, the direction of the line ok? The difference appears, you simply cut. Right?
> G: Right.
> O: So, you pull the line, you cannot go out of the line. (And I left. When I came back... the thing was almost 45 degrees lopsided. I told him:)
> O: Gilberto, you have to take them out!
> G: No, but...
> O: No way... Look at it from here!
> (Conversation between Oliver and Gilberto, São Joaquim)

Flavia, Levy and Hugo hired bricklayers whom they already had heard about. All the people they have hired were recommended by their acquaintances, relatives and friends. This was also the case for Louis, who hired José, an old acquaintance of the family, who lives nearby. The bricklayer who works for Eduardo also lives in São Joaquim. He has worked for him for more than 20 years and is a friend of his family.

In sum, there is a general imbalance in the working conditions in *battlers*' building sites. First of all, there is a high demand for domestic renovations, small additions and small scale constructions, which have received very little attention from official programs. This carelessness seems very strange if we consider the great proportion of informal building in Brazil compared with the formal market, and when we realise that the government depends somehow on informal building production to avoid

chaos. At the same time, there are lots of manpower offers, mostly unqualified - everyone can become a bricklayer, since the work does not demand formal training or education. Otherwise, there would not be so many people complaining about it. Out of 28 informants who are self-producers, about 80% listed manpower as their main complaint or concern. The ones who did not complain about it were those whose manpower were close friends or family. In any case, all of them completely depended on these workers to raise their homes. In general, building sites' manpower has no adequate preparation and formation, but learnt by doing, along with those who have also learnt by doing, under the same uncertain conditions. Besides all that, informality prevails. People do not earn so badly, but they have no job security. Somehow there is a problem with the correlation between knowledge, time, tasks and costs.

The manpower from informal markets is, to some extent, the same as that working for construction companies. The working conditions in this category have to do with many satellite topics around the construction field. This research does not cover all of it, but deals with manpower as one important aspect of the *battlers*' housing self-production. Finally we might ask ourselves - if self-producers are able to do all of this work, and they do so much in very difficult circumstances, what could they achieve under better circumstances? What would be a better scenario for *battler* self-producers? What is needed for that?

Conclusions

CONCLUSIONS

The purpose of this doctoral investigation is to unveil the conditions of Brazilian housing self-production in the context of a supposed socioeconomic rise of a new precarious working class - the *battlers* - during the first decade of the twenty-first century. For that, an empirical and qualitative research approach was adopted. The idea was to gather residents from the peripheries of a Brazilian metropolis who have recently self-produced their homes and to find out to what extent this social rise has impacted their self-production processes. The research resulted in a kind of critical catalogue on housing self-production, based on analytical discussions regarding five central topics - the acquisition of dwellings and real estate, the types of construction processes that self-producers have used (which I have called *building overtime)*, the spatial quality they achieve, the most common technical complications they have to deal with, associated with the aspects from the available building materials, and characteristics of the building site workers who serve them as manpower.

To present the above-described research processes, this thesis was divided into basically three parts with three different characters, in addition to the first part that explains the research methodology used. From the three main parts, the first one consisted in the theoretical background upon which the research was grounded. It explained to the reader the basic concepts which are necessary to understand

such a complex urban environment as this one. The second described in detail the fieldwork and the systematisation of the information obtained in the fieldwork. As we could observe, the fieldwork was the core of the work, since the research was strongly based on self-producers' reported experiences and on the participative observation *in loco.* The third part consisted of critical-analytical discussions. The structure of the thesis combined both theory and practice, presenting and contextualising stories about the self-production of housing made by the Brazilian *battlers*.

The methods informally used by the Brazilian *battlers* to purchase land and housing reveal the courage and the potential of this social group. It proves that they do whatever is necessary to achieve a better life, demonstrating how much further they would advance if they had access to adequate support. In this sense, housing ownership is a precondition, since social rights have been transformed into commodities. Only those who can pay for them are able to access them. Therefore, rent is an expense which *battler* self-producers must eliminate.

Overtime building processes are the way self-producers have found to proceed with the building site work. Given the restricted access to formal loans in banks, to adequate forms of credit, and their lack of economic power and other forms of capital, mainly social, under the variation of "familiar" capital, the quick construction of an initial embryo - a wooden hut or a one-room unfinished brick house - is determinant to start the construction process. More fortunate social groups can count on official forms of "the first step". Higher-salaried workers are included in mortgage and housing financing systems. They might be able to save and to purchase an apartment or to hire professionals to plan and build a house. Wealthy families preserve their assets, which is the first step forward to home ownership for the younger generations. The poor are excluded from those systems.

For *battlers*, their typical resilience in the first steps of construction is followed by great creativity in dealing with the available space. In all the samples that comprise this research, I have seen only very interesting spatial organisations, in a larger scale within the limits of a plot, and in a smaller scale inside the dwellings themselves.

At the same time, new home-owners must deal on a daily basis with many technical complications, usually directly related to the manpower they are able to access. The constellation of problems and the technical demands of the self-production process are evident in many ways. They are closely related to

the nature and skills of the manpower that participates in it. The need for a good basic education is urgent and would change many existing social structures. Complementary to this idea is the *battlers'* access to technical know-how, supported by the development of affordable alternative building materials and construction elements that meet the reality *battlers* face every day, in addition to the need for economic support in the form of small-scale loans with reduced interest, associated with some kind of technical advisory initiatives.

From these five analyses, my first conclusion is that self-production is not to be judged as a good or bad practice, but a necessity. This type of housing production has undoubtedly protected urban Brazilian peripheries, and the entire society, from a much worse situation by providing dwellings for those who cannot formally access conventional housing. Moreover, it highlights the fantastic human potential of Brazilian *battlers*. The good aspects of self-production - flexibility, adaptability, affordability, creativity and freedom - demonstrate how small-scale actions spread over a territory are powerful. If such aspects could be improved, and at least some of the problems of self-production solved, a more promising housing situation could be envisaged in Brazil.

On the other hand, this type of housing production should not be romanticised. If anything, self-production demonstrates just how hard people's lives have been. It is one of the many manifestations of social inequality, constantly displayed on our peripheries, almost a cry for survival. As in many other fields, the economic system excludes the poor, the existing social structure maintains this inequality as it is, and governments have been unable (and seemingly do not have the interest) to change this situation.

At the same time, self-production processes demonstrate the urgency to research, develop, test and implement forms of adequate technical support, with professionals prepared to deal with this type of demand, able to provide a true model of technical advisory that is different from the conventional forms of technical assistance. The issue here is not whether people need technical assistance, but which kind of professional is able to provide it. Conventional forms of technical assistance actually tend to maintain the status quo and reinforce the domination of experts over lay people - in other words, the domination of the rich over the poor. Additionally, the research demonstrated that most technical complications in *battlers'* dwellings are directly connected with the living and working conditions of the manpower, who are also *battlers* themselves. As urgent as the need for an adequate technical advisory for self-producers,

is the need for proper training of the manual labour force. This is a very broad preoccupation, as it includes a critique on basic education and the general lack of worker training in Brazil.

The crucial point when we unveil the self-production of Brazilian *battlers* is that without housing it is impossible to rise socially or economically. In a society where citizens are dependent on economic power to have their basic rights met, affordable housing plays a fundamental role. Self-production is the key to affordable housing in the sense that only in this way are people liberated from paying rent, assured by home ownership and their ability to build over time. In this sense, whether it is a wooden hut or a three-storey house, self-produced ownership is the passport to socioeconomic rise.

Additionally, this research aims to motivate Brazilian researchers and professionals to update construction processes, design methods, building materials, working practices and human resource preparation, consistent with local self-production settings. Especially in Brazil, there is an urgent need for public policy initiatives addressed to self-production, since it is prevalent throughout Brazilian cities. There should be, however, a multi-disciplinary approach, since self-production is, undoubtedly, a multi-disciplinary issue.

Moreover, this work hopes to encourage professionals from universities, development agencies, and the private sector – including other emerging nations - to investigate how their own *battlers* have self-built and accessed habitable dwellings. In order to improve the quality of life in cities, it is clear that city planners have to begin to work in accordance with the demands of self-produced urban environments.

Despite some isolated efforts toward institutional reforms, unfortunately Brazil is out-of-date in terms of strategic planning capacity. Those efforts militate against the dominant forces of the country which have always maintained and encouraged social inequality. In this context, any discussion about architecture seems to be too superficial, and loses all perspective, if we fail to discuss the nature of the building production which has profoundly shaped the cities of today.

The basis of the this production is the self-production, which will continue to play an important role in our cities and neighbourhoods and to shape the space of our homes.