

SLUM STRATEGIES FROM HOUSING TO URBAN SCENARIOS IN LATIN AMERICA

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EPFL MASTER THESIS RESEARCH 2015
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WHAT TYPE OF STRATEGY PRODUCES WHAT KIND OF PROJECT FOR WHAT IMPACT?

ABSTRACT

The growing formation of informal settlements needs to be addressed by urban and architectural approaches. The slum population have certain needs. NGOs, architects and governments have developed different strategies to meet these needs in an effort to improve the quality of life in slums. These range from micro-credits for housing improvement, to on-site infrastructure construction to demolition and reconstruction on another site.

This research develops tools to understand the global slum phenomenon as well as specific informal settlements. It also analyzes different strategies implemented in slums and studies if they are enforced by local governmental policies.

KEYWORDS

slums, architectural, urban, strategies, Latin America, informal settlement, favela, campamento, asentamiento, Chile, Brazil, housing policies, urban planning.

I WOULD LIKE TO THANK

Prof. Bolay for his enthusiasm towards this research and for sharing his worthy experience, Prof. Dietz and Charlotte Erckrath for their involvement and the time they took for discussions and to share their critical views.

Philippe Buchs and Yves Magat for their on-site feedback in Chile and Brazil.

All those who took the time to share their knowledge and participate in the discussions: Wally Allende, Andrés Doyharçabal, Gisela Fuenzalida and Sofía de la Jara of TECHO Chile and Uruguay, Prof. Brillembourg and Prof. Klumpner of Urban-Think Tank, Juan Ignacio Cerda of Elemental, George Deikun of UN-HABITAT and Fabienne Hoelzel of Fabulous Urban.

Kat Kovalcik for proofreading, Emy Amstein and Antoine Montessuit for their layout, typography and print tips.

EDITORIAL NOTE

Working on architectural and urban levels in an informal settlement context is a complex question that I wish to address through this research.

The choice has been made to concentrate on Latin America for various reasons. It is the continent with the highest urbanization rate and, as the following research shows, it is closely connected to informal settlements. The continent has high inequality rates and very segregated urban forms. Furthermore Latin America has an important history in policies providing housing for the poor. This region has also been chosen because I have had some experiences working in some of its informal settlements.

In the introduction, the first step is to have a global view of the slum phenomenon and its magnitude. The goal is to have an understanding of its localization, the reasons that can lead to the formation of slums and its relation with global urbanization.

The second step analyzes the various definitions of the word “slum” and its local interpretations. The intent is not definition as an end point but as an entrance point to extract problems and open up the scope of research. It is however important to briefly discuss the precision of definitions since they tend to orient the direction of undertaken interventions.

From this awareness and understanding of the phenomenon at a global scale, the following chapter “Slum Studies” aims at developing a methodology to grasp the actual situation of specific informal settlements with an architectural and urban approach. The goal of the methodology is also to provide tools to identify qualities and problems in a slum that can be starting points for projects. It also strives at underlining these problems and qualities with architectural representations in order to understand them spatially and more easily re-input or address them in architecture and urban projects.

In other words it provides a more accurate understanding and reveals opportunities. This methodology is then tested in two very different types of slums to see what outcomes it can produce.

In developing these slum study tools to grasp the realities of specific informal settlements and in presenting these case studies of two different slums as a background, the third part of this research consists in analyzing different intervention strategies. This analysis is done through discussions with professionals who have worked with the strategy and project case studies. The strategies respond to population needs. The strategies and projects are presented alongside the policies enforced in the country where the project is built. By doing so it is possible to determine the strategies that are taken into account by governments and the ones that could or should be.

To finish this research and responding to this note are a set of outlooks. Their aim is to highlight the outcomes of the two slum studies and of the analyzed strategies. The goal is to extract qualities, problems, opportunities and experience from the slum studies and the strategy studies that form a toolbox for the project that will follow this research.

I hope that in reading this study, you will be as engaged as I was while realizing this research.

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* Note: Throughout this research, the word "slum" is not used for its negative associations or desperate image. The word "slum" is used for its global reach, its wide heterogeneous definition that can include every scale and the inhabitants and its understandability by non-specialist. This discussion is continued on page 35

I. INTRODUCTION

URBANIZATION

MAGNITUDE

DEFINITIONS

PROBLEMS

The following introduction briefly analyzes urbanization patterns while relating them to the formation of informal settlements. By looking at the evolution of urban growth and the percentage of slum dwellers, it is possible to expose the magnitude of the phenomenon and the risk of its expansion if no measures are taken. The factors that influence slum formation are also studied.

The second half of this chapter focuses on the definition of a slum and the issues it can potentially create. These definitions are also a source of information for extracting recurring problems in slums and are a legitimate base for starting the analyzes.

SLUMS

URBAN

adj.
Brit. /'ə:b(ə)n/ , U.S. /'ərbən/

a. Relating to, situated or occurring in, or characteristic of, a town or city, esp. as opposed to the countryside.

b. That constitutes or includes (part of) a town or city.

PERCENTAGE OF POPULATION
LIVING IN URBAN AREAS BY REGION

**SINCE 2008, FOR THE
FIRST TIME IN HISTORY,
MORE THAN HALF
OF THE WORLD'S
POPULATION
IS LIVING
IN CITIES.**



fig. 1 - UN World Urbanization Prospects, 2007

PERCENTAGE OF POPULATION
LIVING IN URBAN AREAS

**THE RATE OF
URBANIZATION HAS
BEEN INCREASING
CONSTANTLY SINCE
1950. IT IS A GLOBAL
PHENOMENON.**

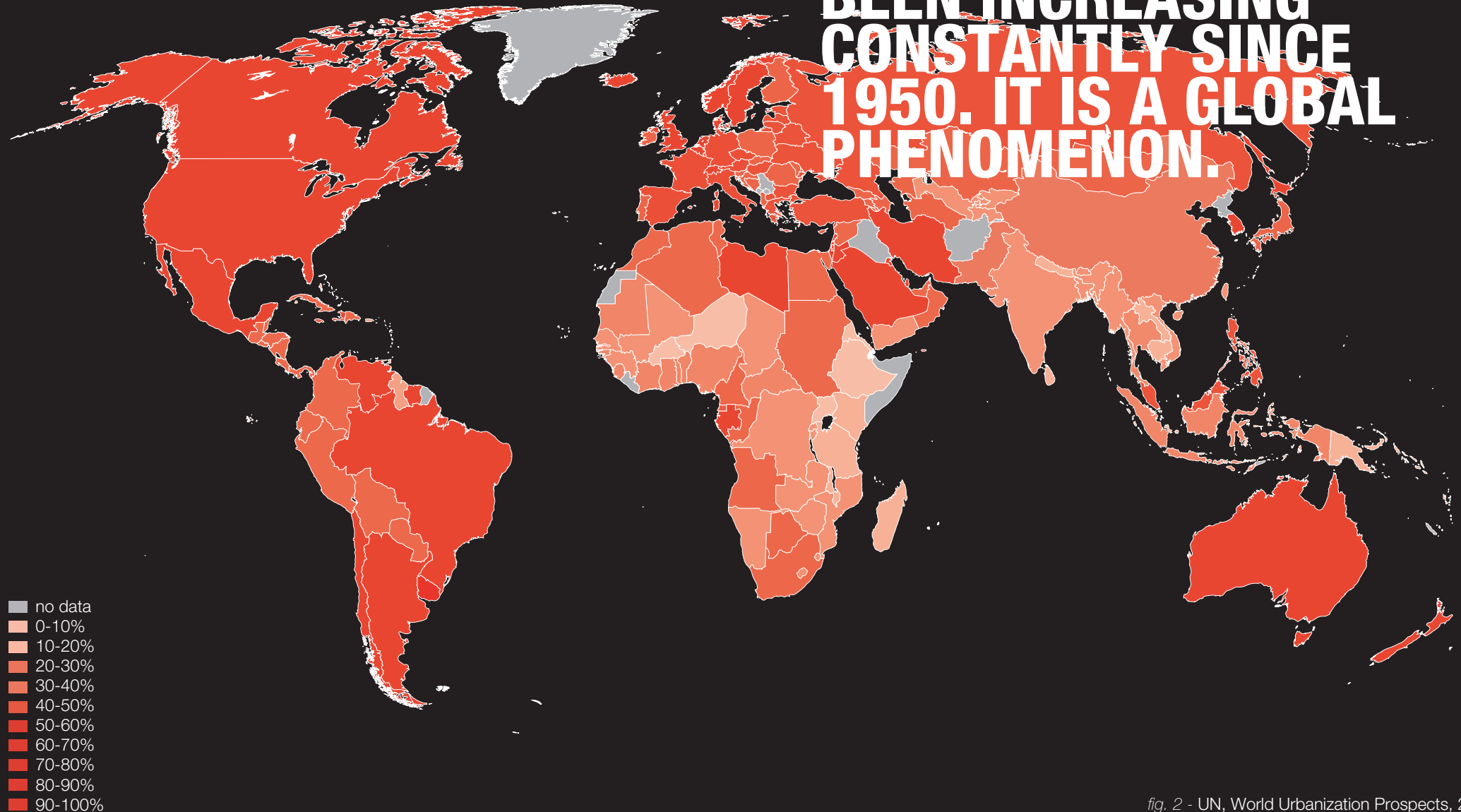


fig. 2 - UN, World Urbanization Prospects, 2014

IN 2014, 3.88 BILLION PEOPLE LIVE IN AREAS CLASSIFIED AS URBAN.¹

“There is no common global definition of what constitutes an urban settlement. As a result, the urban definition employed by national statistical offices varies widely across countries, and in some cases has changed over time within a country. The criteria for classifying an area as urban may be based on one or a combination of characteristics, such as: a minimum population threshold; population density; proportion employed in non-agricultural sectors; the presence of infrastructure such as paved roads, electricity, piped water or sewers; and the presence of education or health services.”²

UN, World Urbanization Prospects, 2014

It is notable to mention that in most countries infrastructures and services are considered as criteria for a neighborhood to be classified as urban. Most slums are located in urban contexts but usually lack either one or the other, if not both.

In developing countries, urban centers are continuously attracting inhabitants of rural areas. Reasons for these migrations vary from seeking work opportunities, to a wider offer of public services such as medical centers and schools for their children or as an investment for their future generations.³

Africa and Asia are the home of respectively 16% and 60% of the world's population.⁴ When looking at their urbanization growth prevision slope (fig. 1), we can see correlations with Latin America's urbanization growth's peak. Therefore looking back at the urban evolution and the housing policies in Latin America may, not only help find alternatives for the continent itself, but also reflect on possible local interventions in other regions that are following a similar urbanization path.

The expansion of slums is a “product” of the 20th and 21st century's urban growth and has become an important component of cities in developing countries.⁵ Currently, the urban agglomerations that have the most important growth are medium-sized Asian and African cities, with a population under 1 million inhabitants.⁶



Population evolution in one generation, in billions

SLUM

Vocabulary by country

ASENTAMIENTO

Latin America

VILLA MISERIA

Argentina

FAVELA

Brazil

CAMPAMENTO

Chile

COMUNA

Colombia

BARRIO

Honduras

PUEBLO JOVEN

Perú

CANTEGRIL

Uruguay

RANCHO

Venezuela

...

SLUMS

n.
/slʌm/

2. a. A street, alley, court, etc., situated in a crowded district of a town or city and inhabited by people of a low class or by the very poor; a number of these streets or courts forming a thickly populated neighbourhood or district where the houses and the conditions of life are of a squalid and wretched character. Chiefly pl., and freq. in the phrase back slum(s). Also rarely, a house materially unfit for human habitation.

PERCENTAGE OF URBAN POPULATION
LIVING IN SLUMS

**ALTHOUGH
PERCENTAGE-WISE
THE POPULATION LIVING
IN SLUMS
IS GLOBALLY
DECREASING...**

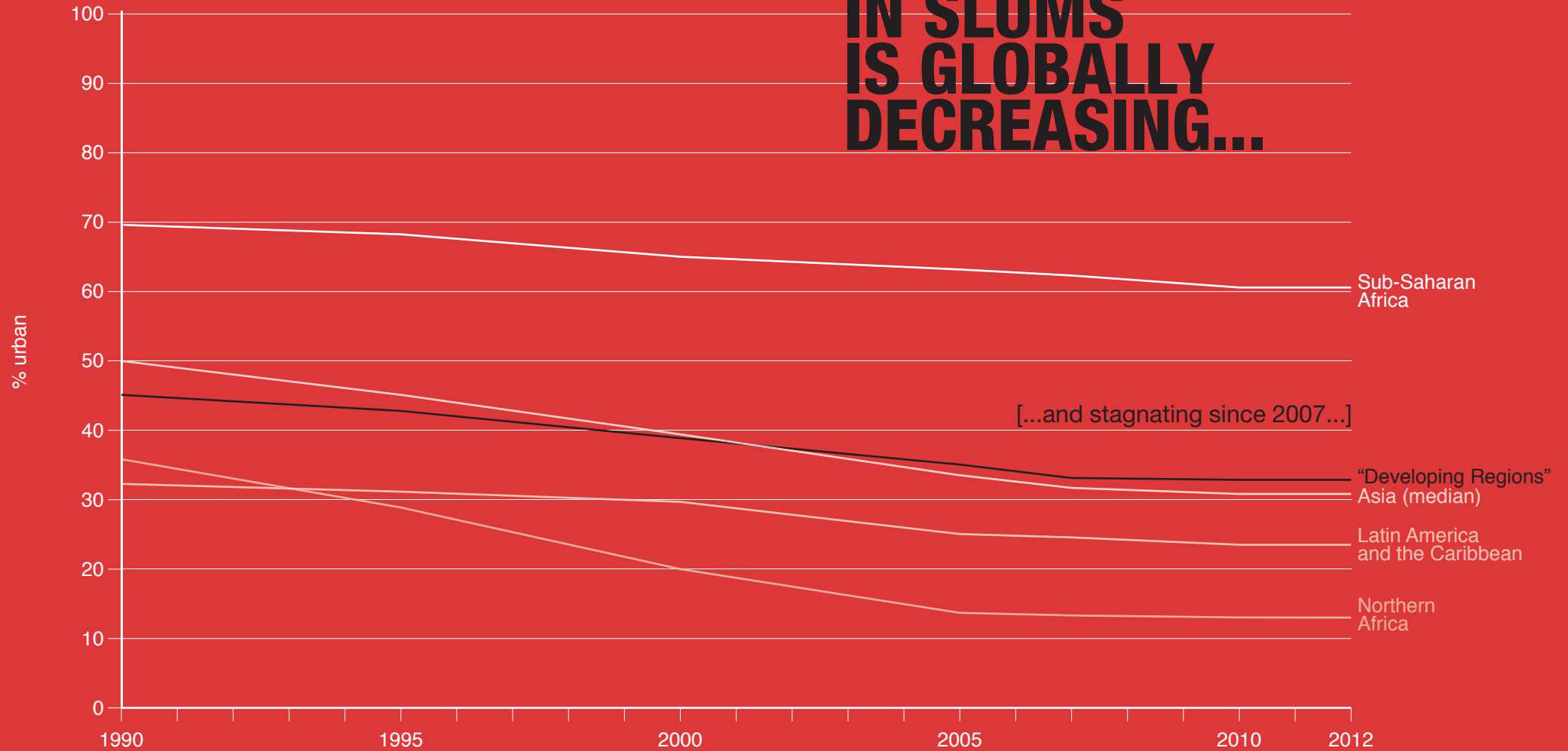


fig. 3 - UN-Habitat, Global Urban Indicators Database, 2012

URBAN POPULATION
LIVING IN SLUMS

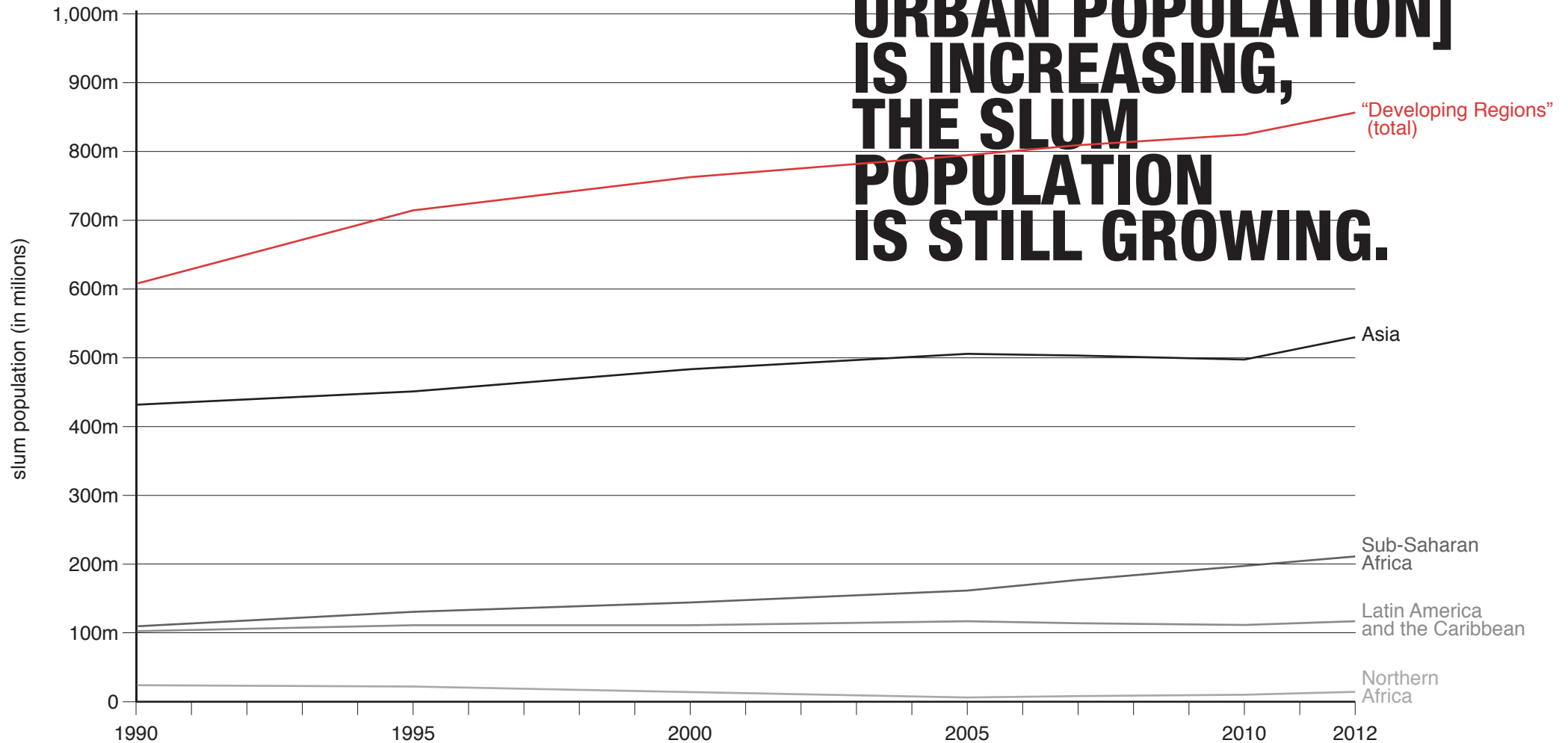


fig. 4 - UN-Habitat, Global Urban Indicators Database, 2012

PERCENTAGE OF POPULATION
LIVING IN SLUMS

THE SLUM POPULATION DISTRIBUTION IS CONCENTRATED IN THE "SOUTH".

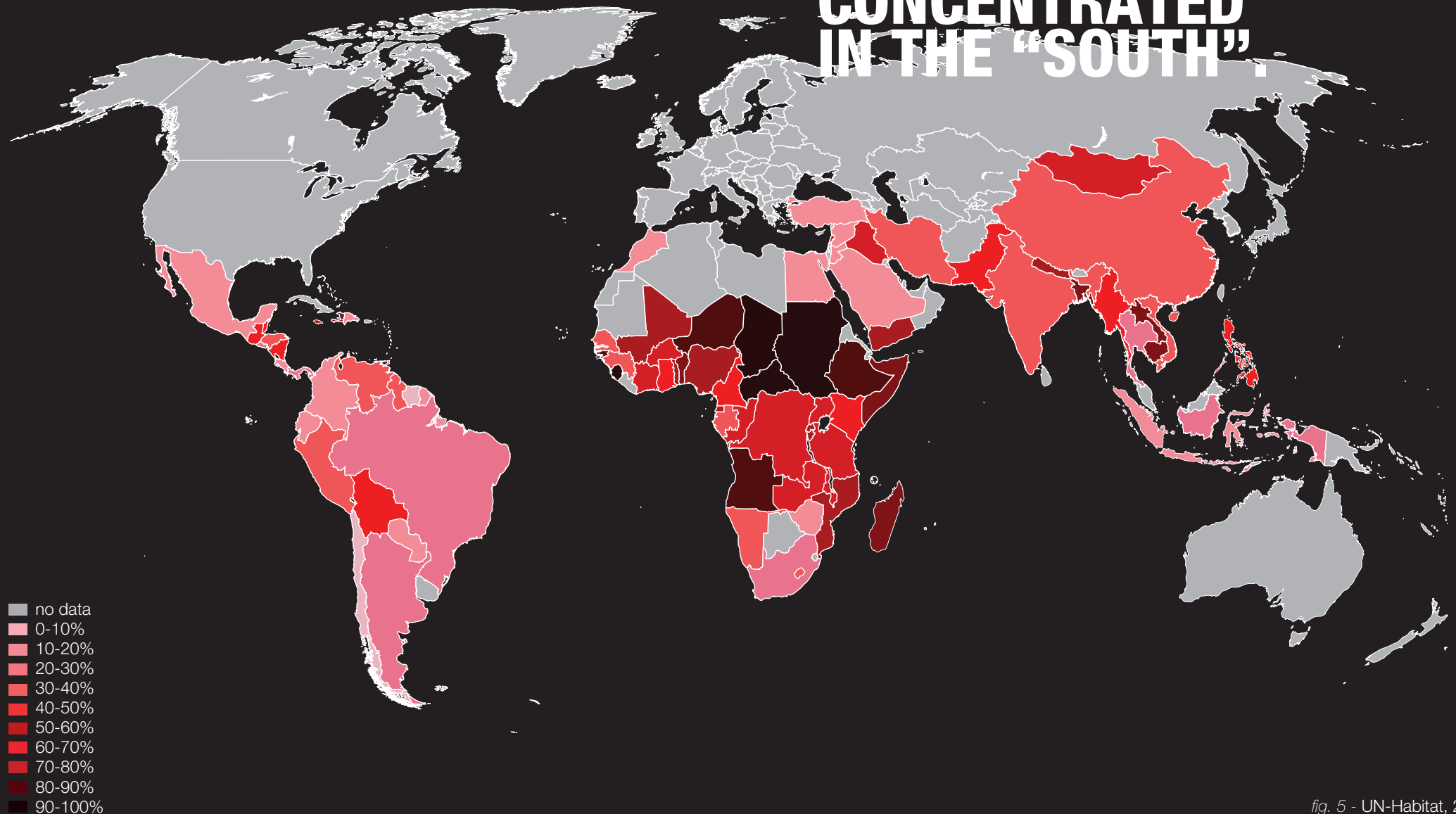


fig. 5 - UN-Habitat, 2005

IN 2012, 863 MILLION PEOPLE LIVED IN AREAS CLASSIFIED AS SLUMS.⁷

“Accurate statistics are in fact difficult to come by, because poor and slum populations are often deliberately and sometimes massively undercounted by officials. [...] the government of Mexico claimed in the 1990s that only one in ten urbanites was truly poor, despite uncontested UN data that showed nearly 40 percent living on less than \$2 per day.”⁸

Mike Davis

The proportion of slum dwellers is not increasing. Nevertheless, since the world population is growing, the number of people living in slum conditions is also growing (fig. 4). The growth of slums is very closely linked to urbanization.⁹ Between 1990 and 2000 the urban population in developing regions increased by 36%¹⁰. Precise data on slum population during this period is lacking. However it is very likely that its growth proportion was even more important than the urbanization.¹¹ According to UN-HABITAT, the number of people living in slums will increase to two billion if “no firm concrete action is taken”.¹²

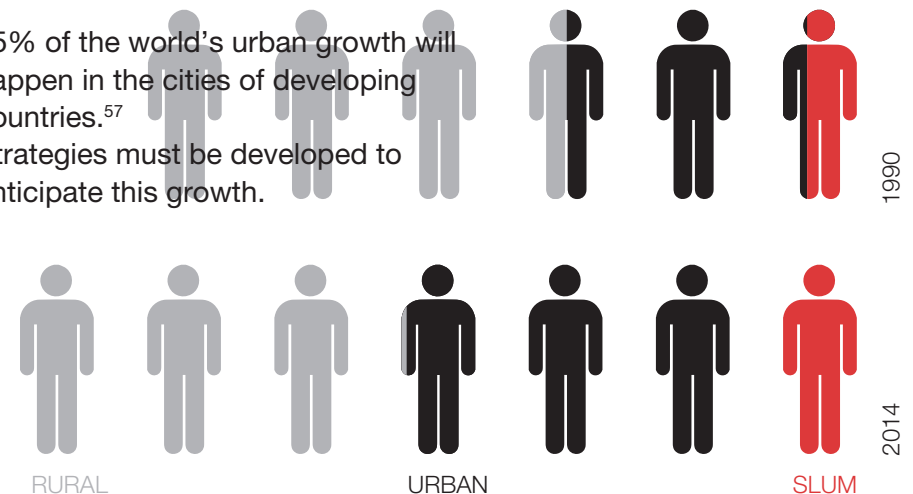
Up to the 19th century in European literature, from Dickens to Hugo, cities are the stages to a concentration of overcrowded housing, deficient infrastructure and insalubrity.¹³

In the 19th century the social hygiene movement and later the modernist movement in the 20th century, placed an emphasis on improving the hygiene of cities and its congested situation by urban planning and architecture. The rural exodus that followed World War I led to unbearable living conditions among the poorest families that lived in slums in the center of the city.¹⁴ Facing this situation, a new generation of architects put hygiene, functionalism and economical construction as a key directions to work on the research of new urban forms that break up with the traditional city's urban fabric.¹⁵

We can argue that three out of Le Corbusier's five points of architecture¹⁶ (pilotis, large horizontal windows, roof garden), along with defining his architectural vision, aim at improving health conditions.

The slum conditions are still at the “very heart” of urban development.¹⁷

95% of the world's urban growth will happen in the cities of developing countries.⁵⁷ Strategies must be developed to anticipate this growth.



Population evolution in one generation, in billions

“THE SLUM WAS NOT THE INEVITABLE URBAN FUTURE.”¹⁸

Mike Davis

“The root cause of urban slumming seems to lie not in urban poverty but in urban wealth.”¹⁹

Gita Verma

This transition from primary urbanization to “better” cities, which happened during the 20th century in Europe, was at a much smaller scale and went relatively slowly. In theory, this acquired knowledge, combined with current technologies should benefit developing countries in carrying out the process in a faster and more efficient way. Two major components impede the realization of this ideal scheme in most parts of the world. Not only are inequality and poverty increasing but there is also a serious lack of planning, anticipating this urban growth.²⁰ Recalling Cuba’s effective housing solutions and avant-garde urbanism in the 60s, Mike Davis advocates that slums were not the “inevitable urban future.”²¹ Correspondingly, UN-Habitat’s notorious 2003 report states that slums are the result of a failure of housing policies, laws and national and urban policies.²²

When planned and managed, urbanization can be the vector of economical growth, social and political improvements and technical advances.²³ On the downside when poorly managed, it can catalyze poverty, urban sprawl and pollution.²⁴ While some urban planners and architects argue that “la città diffusa”²⁵ could be sustainable and even have qualities, in developing countries it is above all characterized by social exclusion. We should however keep this ideal in mind to maybe rethink these residual urban zones as places for opportunities.

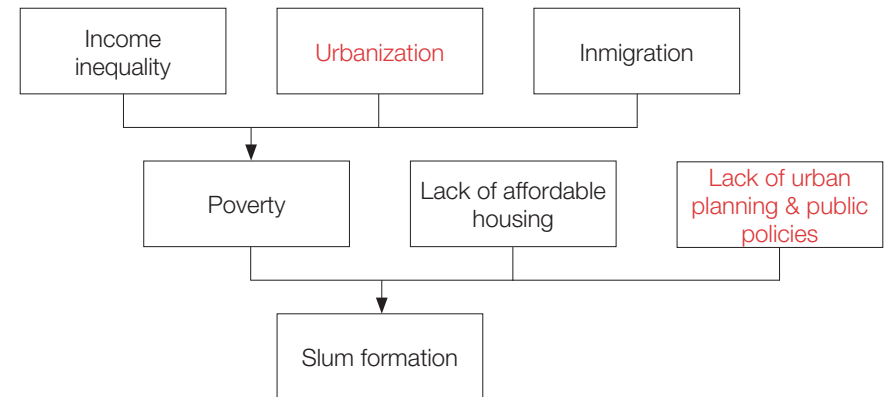


fig. 6 - Slum formation

Informal settlement formation comes from numerous factors (fig. 6) but is mainly due to the failure to provide sufficient affordable housing for the growing low-income portion of the urban population. The state should not only plan the economical growth but also the development of health services, infrastructure and housing.²⁶ In some extremely rapidly growing cities in Asia, neither the government nor the private sector are able to accommodate the demand.²⁷ In other regions it is sometimes a result of an absence of political will, a lack of financial resources²⁸, corruption or the misuse of public funds. In search of higher profit opportunities, investments in other programs have more rapid economical returns on well-positioned land. Hence, slums tend to develop in residual public or private lands, where tenure is unclear or that have a major defects for being good constructible sites.²⁹ The magnitude of the phenomenon tends to show that slums are a key point in contemporary urbanization³⁰ with which politics should work.

**STATES SEE
SLUMS
AS PROBLEMS.**

**THEY ATTEMPT TO
DEFINE THEM WITH
WORDS.**

DEFINITION

^{n.}
/dɛfrɪˈnɪʃən/

1. *The setting of bounds or limits; limitation, restriction. Obs. rare.*
2. *The action of determining a controversy or question at issue; determination, decision; spec. a formal decision or pronouncement of an ecclesiastical authority. Obs. exc. in specific use.*
3. *Logic, etc. The action of defining, or stating exactly what a thing is, or what a word means.*

WHAT IS A SLUM?

*"It is a black, dilapidated street, avoided by all decent people, where the crazy houses were seized upon, when their decay was far advanced, by some bold vagrants who after establishing their own possession took to letting them out in lodgings. Now, these tumbling tenements contain, by night, a swarm of misery. As on the ruined human wretch vermin parasites appear, so these ruined shelters have bred a crowd of foul existence that crawls in and out of gaps in walls and boards; and coils itself to sleep, in maggot numbers, where the rain drips in; and comes and goes, fetching and carrying fever [...]"*²⁷

Charles Dickens

*"Slums, semi-slums and superslum ... to this has come the evolution of the cities."*³²

Patrick Geddes

HOW TO DEFINE SOMETHING AS COMPLEX, CHANGING IN TIME, DIFFERENT DEPENDING ON EACH SITUATION AND HETEROGENEOUS AS A "SLUM"?

In order to identify a situation, the intended population and set goals, a clear definition is needed. Only then is it possible to envision action. However finding such a definition brings up a variety of other questions. For example what is considered "unfit for human habitation"³³ changes considerably from a region and its customs to another. Furthermore even relatively clear criteria such as access to infrastructure or security of tenure can be complex in reality to assess, for instance housing with water access but no money to pay for it.³⁴

The academic Alan Gilbert is quite skeptic about using the term "slum" both for its pejorative and emotive sense and for its relativity. He argues that it is impossible to define "safely" in a "universally acceptable way" a relative concept that is perceived differently depending on the context, culture and social class and additionally that changes swiftly in time.³⁵ Nevertheless an agreed definition is necessary for measuring the magnitude and incorporate its monitoring in national population censuses.³⁶ We could decline the word slum into hundreds of other ones naming each situation, as it is somehow already the case with the local names in countries. But in order to raise a global awareness, it may be useful to have a "catch-all term"³⁷. It is furthermore unlikely that by using a different name the population will see "slums" and its inhabitants in a different way.

Consequently, although the term "slum" is "loose and deprecatory"³⁸ its definition is essential in analyzing and acting for improvement. We shall however use the word with caution to avoid stigmatizing communities in the eye of the general public or presenting slums as the problem³⁹ as has done in a way the UN and Cities Alliance's campaign "Cities without slums"⁴⁰. Furthermore it is important to keep in mind that the term slum and its definition, though it seeks to be global, also tends to neglect various other situations of social segregation and spatial fragmentation, in both "rich and poor" countries.⁴¹

SLUM CRITERIA

“Slum definitions” expose the situation of the informal settlement situation of a country and are a recognition of the State’s failure in managing urban growth and/or of the problematic living conditions in which slum dwellers live in.

The UN definition⁴² was an important step to set a global common ground. Although most definitions of countries are national adaptations of the UN definition, a precise understanding of the criteria of a country can reveal its approach. The definition of a country will influence the orientation and type of policies it will put into place. Moreover it is closely linked to the economic ambition of the country to contribute in finding solutions, since the definition frames what “slum” can call itself so and will be able to apply for certain funding programs. Finally these definitions can also indicate the more specific recurring problems of a country and its living standards..

The following categorization is established in order to identify the importance given to the various criteria defining slum conditions in different countries and for international organizations.

-  HOUSING & CONSTRUCTION
-  INFRASTRUCTURE & SERVICES
-  WATER & ELECTRICITY
-  DENSITY & SIZE
-  LAND
-  SOCIAL

CITIES ALLIANCE “Cities without slums” definition (2000)⁴³

Slums do not have:



basic municipal services — water, sanitation, waste collection, storm drainage, street lighting, paved footpaths, roads for emergency access;



schools and clinics within easy reach, safe areas for children to play;



places for the community to meet and socialize.

UN-HABITAT (2002)⁴⁴

defines a slum household as a group of individuals living under the same roof in an urban area who lack one or more of the following:



Durable housing of a permanent nature that protects against extreme climate conditions.



Sufficient living space which means not more than three people sharing the same room.



Easy access to safe water in sufficient amounts at an affordable price.



Access to adequate sanitation in the form of a private or public toilet shared by a reasonable number of people.



Security of tenure that prevents forced evictions.

BRAZIL, “Favela” conditions⁴⁵:

Have a minimum of 51 housing units



Occupy someone else’s land (public or private)



Dense and unorganized houses



The majority of public services and essential services are lacking

CHILE, “Campamento” conditions⁴⁶:

There must be at least 8 families



The campamento area is smaller than the number of houses divided by 350



There is no security of tenure



At least one of the following services is irregularly available: electricity, water, black water evacuation



It is located inside of an urban zone

URUGUAY, “Asentamiento irregular” conditions⁴⁷:

Have a minimum of 10 housing units



Built without authorization of the owner of the land



In formally irregular condition and without respecting urban norms



Lack of all or some basic urban infrastructure services



Frequent lack of access to social services

“THE DEFINITION OF A SLUM HAS MISLEAD THE WHOLE PROBLEM.”

Alfredo Brillembourg

EXTRACT FROM A DISCUSSION WITH
ALFREDO BRILLEMBOURG OF URBAN-THINK TANK

ETH, Zürich / 04.12.2014

DM

AB

Is it still necessary to have a slum definition?

At Urban-Think Tank, we think slum is a problematic word. In Venezuela they are called barrios, neighborhoods. “Slum” is an American generic word that has a lot of connotations. And we think the way the UN quantifies poverty, with points like access to toilets and living with under 1\$ a day is the wrong way to do it.

For instance the Torre David in Caracas has confused a lot of people whether it is a vertical slum or not, because it has good infrastructure, solid concrete floors, water and sewage built by the inhabitants and good accessibility to transport. The only thing that qualifies it in anyway related to a slum is the lack of tenure.

And so the definition of a slum has mislead the whole problem. Cities like to quantify and show their low percentage of population living in slums, but how are they measuring it? If we go to the definition of people living with inadequate means; of infrastructure, transport, accessibility to a safe and good house, then we start to get outstanding numbers like 50% of the world population living in these conditions. But then are you calling the Bronx or Harlem or the outskirts of St. Louis or Ferguson a slum too? Politics will say it isn’t a slum problem but an issue of cities in general. That is why I don’t like the term. I believe it is more of people living in parallel societies.

The word slum is very inadequate but this is a problem all along our urban language and that is why politicians just do not get it. We need a whole new lexicon, a whole new language to describe the urban qualities that are going on today in these hybrid, strange and unclear places.

SLUM PROBLEMS

By reviewing the different definition given to slums by local and national governments, institutions involved and public perception, UN-HABITAT identified the following recurring problems,⁴⁹ while others such as the informal economy and loss of state control dimensions have been added following discussions with inhabitants.

LACK OF BASIC SERVICES

The lack of basic services such as electricity, waste collection, roads, lighting... is one the most recurrent characteristic of slums worldwide.

LACK OF INFRASTRUCTURE

The lack of infrastructure and social services is also a persistent situation in slums. It goes from schools and educational infrastructure to health services to cultural and social facilities.

OVERCROWDING

Overcrowding and extremely high densities are common in slums. It can be seen through various families living in the same housing unit. It also happens in the form of numerous persons living in the same room, which is often used for different functions such as sleeping, cooking, living, etc.

UNHEALTHY CONDITIONS

Slums are tragically known for their unhealthy living conditions. These can come from different factors resulting from the lack of basic services including open dumps, open sewers, lack of clean water, pathways etc.

INFORMAL ECONOMY

In slums an important portion, if not the totality, of the economy is informal. Meaning that the transaction of services and goods does not go through a legal state framework. There are no taxes that go to the state and no social services for the workers.

LOSS OF STATE CONTROL

Taking advantage of their location, the concentration of population, poverty, unemployment and the state disinvolvement in slums, organized criminality develops and finds in them a recruiting and operating strategic situation and controls the services.

HAZARDOUS LOCATIONS

Slums are often built on residual land in the urban fabric. Whether public or private, these lands are in most cases unfit or dangerous for construction. They are frequently prone to floods or landslides or are located on polluted soil or close to railroads and highways.

INSECURE TENURE

In almost all of the definitions, security of tenure is an important issue. Indeed informal and unplanned settlements are generally regarded as slums. Security of tenure is a pivot point in the quality of life in informal settlement because the fear eviction refrains the inhabitants from investing in their house and community.

SUBSTANDARD HOUSING

Most countries have building codes. Informal settlements rarely respect them. Their global construction quality is inferior to the country standard. They are often built with non-permanent materials and inadequate to the climate of the country. Problems often come from improper roofing and floors.

POVERTY AND SOCIAL EXCLUSION

Income segregation is often seen as a consequence of slum conditions.

Slums are a visible phenomenon that generate social obstacles to human development within a city. It is also a factor of exclusion during employment processes.

This list is of course not exhaustive, which is why a specific study of each case is necessary. In the following case studies of slums the goal is to identify the distinct problems and their causes as well as opportunities to solve them by an architectural / urban planning approach.

II. SLUM STUDIES

METHODOLOGY

SLUM STUDIES

LIGHT CONSTRUCTION

Campamento San Francisco, Santiago, Chile

HEAVY CONSTRUCTION

Favela Morro dos Prazeres, Rio de Janeiro, Brazil

Using the global problems in slums studied in the introduction as a starting point, the following chapter develops a method for analyzing specific situations. The methodology uses an urban and architectural approach to identify problems, qualities and potentials. It is also searching for spatial representation means of the problems of slums. It is not romanticizing or embellishing the living conditions in slums by drawings. It is searching for representation techniques that relate the problems, qualities and opportunities of an informal settlement to its spatial and urban form and context. This methodology could be used for analyzes that can ignite projects.

STATES SEE SLUMS AS PROBLEMS.
THEY ATTEMPT TO DEFINE THEM WITH WORDS.

WHAT IF INSTEAD
WE DRAW THEM,
IN SEARCH OF
NEW OPPORTUNITIES
FROM THE QUALITIES
THE INHABITANTS
HAVE BUILT.

STUDIES

^{n.}
/ˈstʌdi/

*1.a. In certain senses of Latin studium (chiefly in translations from Latin):
Affection, friendliness, devotion to another's welfare; partisan sympathy;
desire, inclination; pleasure or interest felt in something. Obs.*

*5.a. Application of mind to the acquisition of learning; mental labour, reading
and reflection directed to learning, literary composition, invention, or the like.*

IN SEARCH OF A METHODOLOGY FOR A BETTER DEFINITION...

The attempt to formalize a rigorous informal settlement analysis methodology has two main goals. On the one hand it should help identify qualities and opportunities. On the other, it should benefit a better understanding of a situation and lead to a more flexible “slum” definition. The method aims at identifying inadequate living conditions. It can and should be applied in any country. With a broader “slum definition” that analyzes all of the scales of the city on its socio-economical, architectural and urban aspects, we would see that “slum conditions” are also found in more developed regions.⁴⁸ For example in France, Ruffin estimates that one million families are inadequately housed.⁵⁰

QUALITIES

Although slums are identified by their negative characteristics, numerous qualities can also be found in them and with their hypothetic future development they could ultimately become a sustainable model for cities.⁵¹ It is often in precarious situations that creative solutions arise. Slums in their positive vision can be seen as hubs of “cultural creativity, economic invention and social innovation”.⁵² While some architects who get criticized for “fetishizing” slums⁵³ note their “ecological qualities”⁵⁴, it seems more relevant and appropriate to mark the social qualities and community dynamism of the “city builders”.⁵⁵ Notwithstanding, it appears evident that any intervention in a slum and project for its inhabitants should study closely the existing qualities in order not to lose them. Hence, without diminishing the slum living conditions, their positive aspects should be noted and transformed into opportunities. The visual representation tools of the architect can assist politics in avoiding the denial of the social fact of informal settlements and into seeing where the potential could be.

...WITH A PRECISE UNDERSTANDING OF THE ACTUAL SITUATION, POLICIES COULD ANSWER THE RIGHT QUESTIONS.

SCALES

Slums and cities in general are complex systems that work at different interdependent scales. To solve planning and organization problems it is necessary to work on different levels and identify the different scales.⁵⁶ Not only does it point out the network and missing links within a city, it also allows to establish who are the concerned actors in a particular scale of problem and initiate dialog.

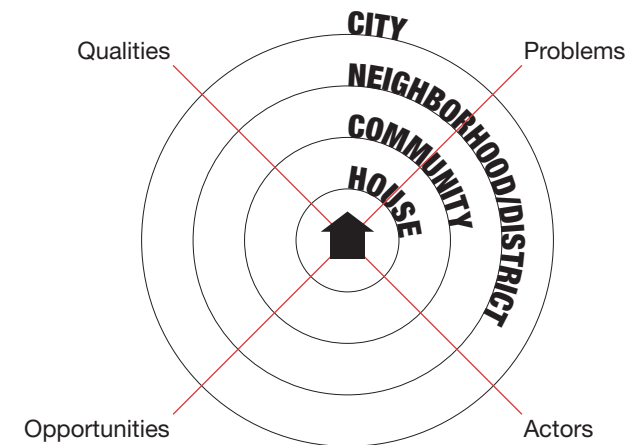


fig. 7 - Slum Study methodology scheme

SLUM STUDIES METHOD

In order to have an understanding of the situation of a particular informal settlement, it is necessary to analyze all of the scales in which it is imbricated and that influence its dynamic. The slum is decomposed in four scales, in a similar matter as Peter and Alison Smithson's "Urban Re-Identification Grid" (house, street, district, city). Their urban analysis tool presented at CIAM IX⁵⁷ in 1953, aimed at highlighting the importance between activities and scales and at re-articulating the current conception of modern architecture and planning.⁵⁸ Similarly, this method intends to re-think to role of policies, architecture and planning for growing cities and particularly in informal settlements.

CITY SCALE

It is possible to analyze the concentration of population and services in relation to the concentration of slums. It can underline the relation between job opportunities and the cities connectivity. It also allows to have a historical overview of the formation of the city and its evolution as well as understand the public policies in place.

NEIGHBORHOOD SCALE

The cause to problems in a slum should be searched further than its own boundaries. Natural features, environmental problems or the lack of public infrastructure and transport are closely linked with the surrounding neighborhoods and district.

COMMUNITY SCALE

It grasps the dynamic of the grouping of informal settlement, its urban morphology and growth and looks at its general construction type. This scale concentrates on the informal settlement itself.

INDIVIDUAL SCALE

The understanding at the scale of the house and the basic living conditions will inform of the priorities for interventions.

The "slum study method" advocates on-site visits, discussion with inhabitants and takes advantage of geographic information systems (GIS) and other architectural representation tools. We need to use them as an approach to understand the problems, identify opportunities on site and visualize the social networks inside and outside of the settlement. More representation techniques should be developed to map social and urban segregation. This process should be participative in order to get details and information that only the ones living in the community know. In Rio de Janeiro, a smartphone app has been developed by the municipality in order to map favelas.⁵⁹ At the same time, the city asked Google to remove favelas from their maps to not have a negative touristic image.⁶⁰ In addition to analyzing the situation on different scales, the method aims at identifying the following points to be starting points for action.

PROBLEMS

The "UN slum problem list" isn't exhaustive. Mapping slums with their problems will bring an in-depth understanding of them.

ACTIVITIES

Informal settlements offer flexibility for various type of activities. This produces on-site jobs as well as multi-functional qualities. It should be analyzed, maintained and enhanced.

QUALITIES

Although slum living conditions should not be romanticized, informal settlements also have qualities. Recognizing them, maintaining them and pushing them further should help prevent from rebuilding destined to fail modernist type social housing.⁶¹

OPPORTUNITIES

Places of opportunities for projects can be found by mapping the slum and discussions with the population. Knowing what their aspirations are and what they are willing to do is a key point.⁶² On a larger scale, opportunities can come from closer dialog between communities and planners and also by smaller successful bottom-up projects that can be exemplified to promote political and policy changes.

“THE CULTURAL AND SOCIAL CONTEXT NEED TO BE PRESERVED.”

George Deikun

EXTRACT FROM A DISCUSSION WITH
GEORGE DEIKUN OF UN-HABITAT

UN-HABITAT liaison office, Geneva / 20.11.2014

DM

GD

Does UN-HABITAT see qualities in slums?

We don't see slums as just negative. It's negative in the point of view of quality of life and access to some fundamental services but slums are also engines of economic activity. People are there in some cases because they want proximity to a job that they already have.

It's a big issue in India, largest cities don't have infrastructure for people to move in an affordable way through the vast distances that separate where they might live and where they work. So people want to locate closer and move to slums. Slum doesn't necessarily mean that people are poor or completely disadvantaged. They might have access to employment and be there for convenience.

In slums there are economic activities and small-scale businesses. There are coping strategies that people have to try to live as a normal life as they possibly can. The cultural and social context is something that really needs to be preserved. That's why we advocate upgrading as opposed to moving and demolition.

It's a thriving community, there are people with skills, there are economic relationships, social relationships, there are coping mechanisms... and all that has to be strengthened and not changed or obliterated.

SLUM STUDIES

“Dwellings in such settlements vary from simple shacks to more permanent structures, and access to basic services and infrastructure tends to be limited or badly deteriorated.”⁶³

UN-HABITAT

TPOLOGIES

By reading the definition above, it is possible to break slums down into two basic typologies: the simple shack and the more permanent structure. It is clear that one is often the evolution of the other and that there is no exact possible classification for something as hybrid and changing as slums. Moreover different typologies can often be found within the same slum.

Nevertheless in a very analytical way, these two typical recurring typologies can be differentiated in order to test the “slum studies” model. The following analyzes are thus based on a “simple shack” type settlement on a flat topography in Chile (Campamento San Francisco) and on a “more permanent” type located on a steep topography in Brazil (Favela Morro dos Prazeres).

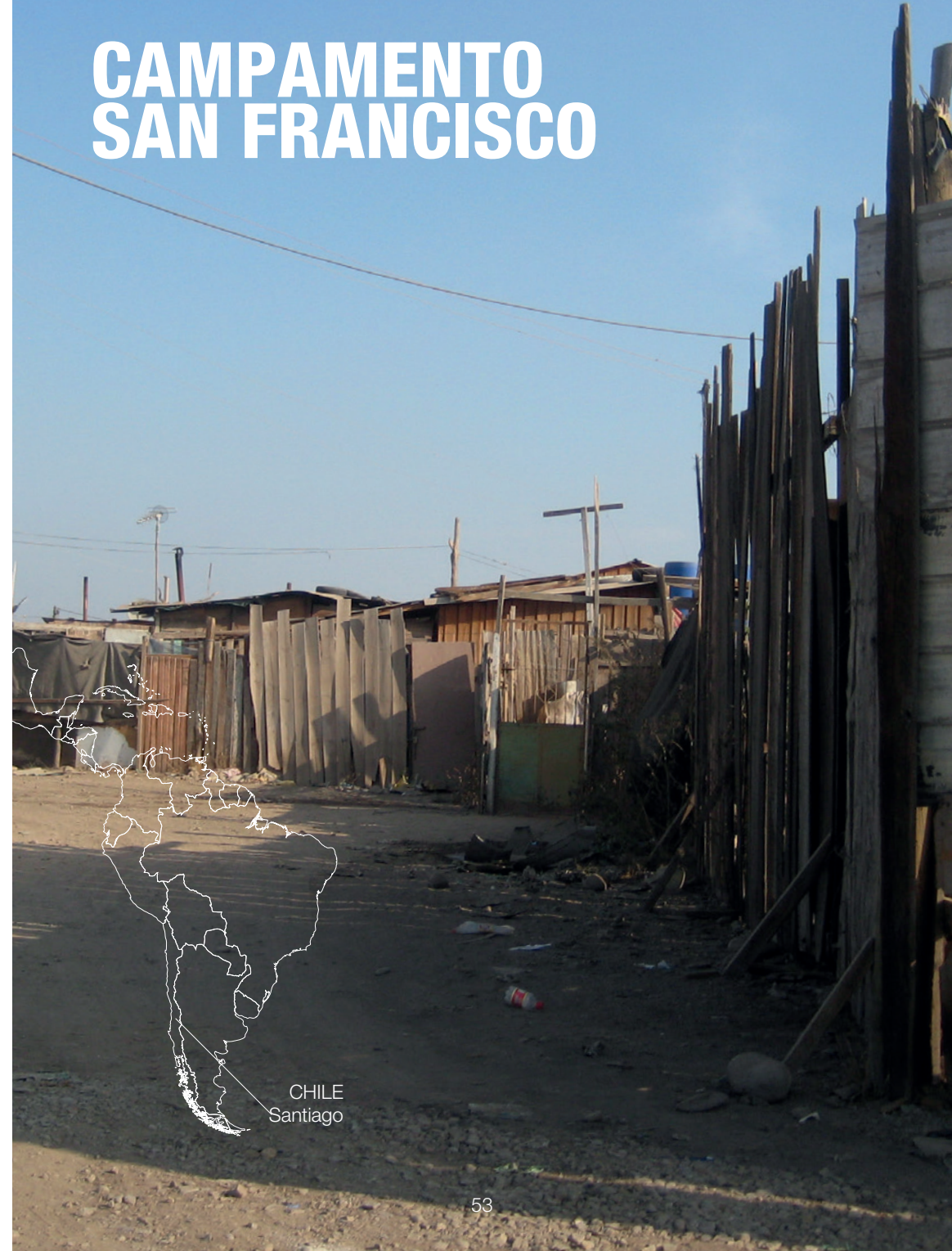
SLUM STUDIES #1

LIGHT CONSTRUCTION

Lighter constructions can come from various reasons ranging from extreme poverty, to low investment due to very insecure land tenure or because the construction is thought of as a short-term solution.

In most cases the situation is not temporary. By their construction type, these slums offer more flexibility for built interventions. The constructive ingenuity and assembly of recycled materials and spare parts should also be examined and re-used in low-cost construction methods.

CAMPAMENTO SAN FRANCISCO



CHILE
Santiago



NAME
San Francisco

COUNTRY, CITY
Chile, Santiago

POSITION
33°35'34.3"S
70°40'00.7"W

OF HOUSES
150

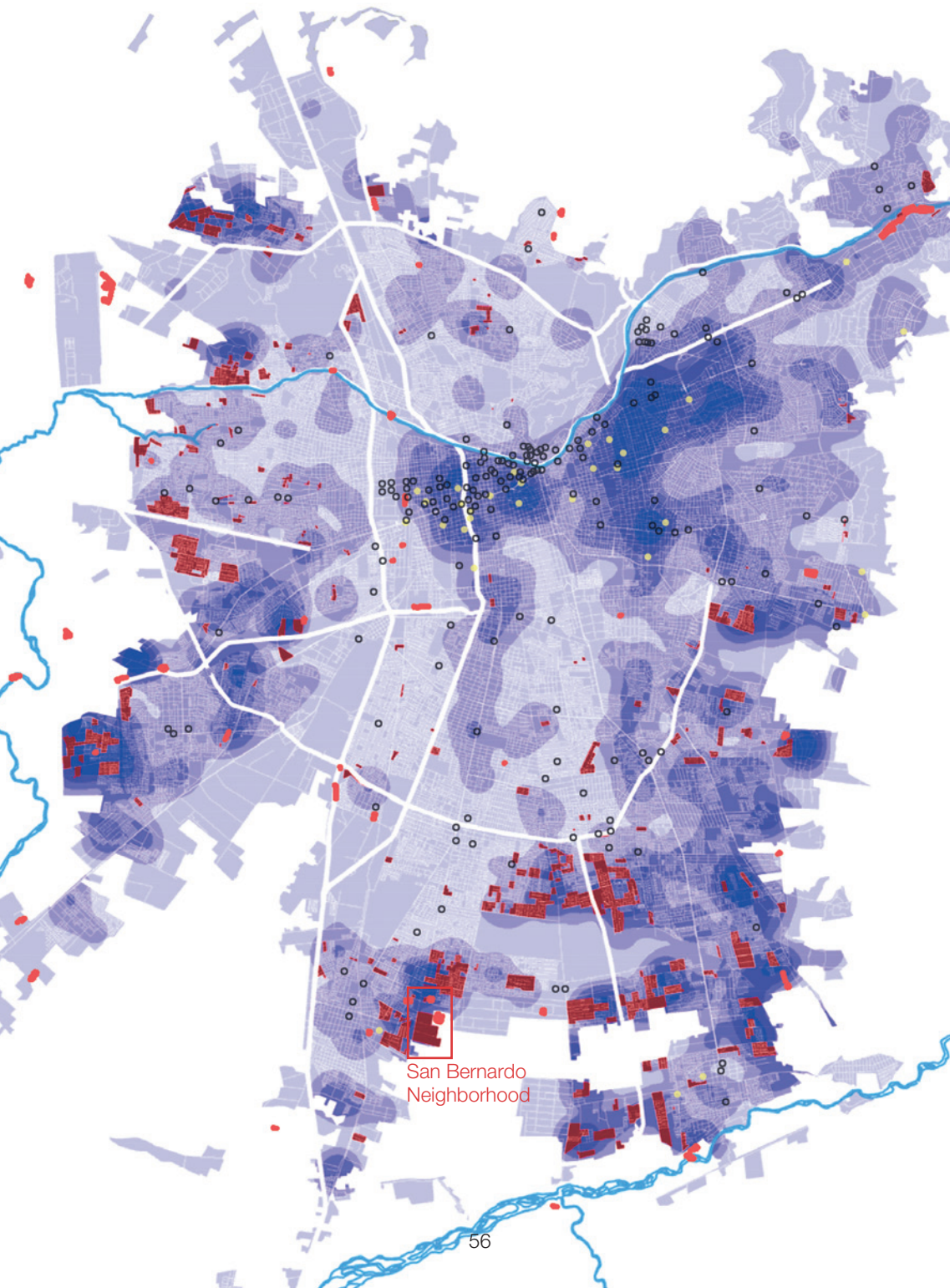
OF PERSONS
533

FORMATION YEAR
1975

SURFACE
35 660 m²

MINVU, Base Nacional de Campamentos, 2014

fig. 8 - Mauricio with his son in front of his house



CITY SCALE SANTIAGO DE CHILE

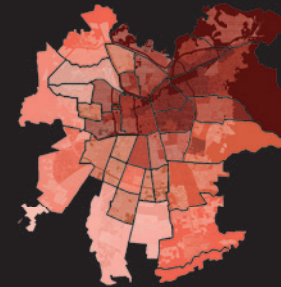
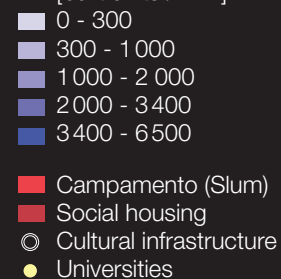


fig. 9 - Land price
[US\$ / m²]



fig. 10 - Density
[built units / km²]



In Santiago and in other Latin American mega-cities, geographers Adrian Aguilar and Peter Ward advance the idea of *region-based urbanization*. They believe it is in this peri-urban space that the reproduction of labor will be concentrated in the 21st century's largest cities.⁶⁵ As in Sieverts' *Zwischenstadt*,⁶⁶ *region-based urbanization* are polycentric urban systems with no clear rural-urban limit. Santiago's history also has an important role in the peri-urbanization of poverty. In 1973 one of Pinochet's first action, after murdering President Salvador Allende and dismantling his government, was to "eradicate" campamentos from the center of the city, both to recreate a homogeneous middle-class and to re-appropriate well located terrain.⁶⁷

Between the 70s and 2000, the Pinochet government and its successors built more than 344 000 social housing apartments known as blocks.⁶⁸ They are 3 or 4 story high buildings financed by the state and have a surface of less than 45 m² by apartment.⁶⁸ Today, 1.2 million people in Santiago currently live in social housing⁶⁹, more than half of the population. Blocks concentrate as many, if not more, problems than campamentos because they do not have the social family control the latter have.⁷⁰

NEIGHBORHOOD SCALE SAN BERNARDO

San Bernardo is a municipality on the periphery of the metropolitan region of Santiago. In 2013 it had 320 000 inhabitants which represents 4.5% of the Santiago population and 1.8% of Chile.⁷¹ 20.1% of the population in San Bernardo are considered as poor and only a third of the children will have access to higher education.⁷² In the 70s and 80s the military government evicted numerous campamentos from the center of Santiago. San Bernardo was one of the major municipalities where they built dense social housing to relocate the campamento dwellers, producing a very mono-functional and socially homogeneous neighborhood. More than 9 000 families live in block-type social housing in San Bernardo.⁷³

The public transport network to San Bernardo is not critical since there are numerous buses but still due to its situation and distance to the end of metro lines, it takes more than an hour and a half to go to the center of Santiago.⁷⁴

The waste problem at the campamento scale is closely linked to the neighborhood scale. Although San Bernardo also has open dumps between blocks, an important portion of the waste in the campamento comes from the neighborhood. One of the slum dwellers aside from his drug traffic activity is also paid to bring large waste to the campamento. He is both feared and despised by the community.

fig. 11 - Programs in San Bernardo

- Campamento (Slum)
- Social housing
- Kindergarten
- Elementary school
- Secondary school
- Ⓜ Hospital
- Health center
- Fire station
- Police station (none in frame)

200m 



COMMUNITY SCALE CAMPAMENTO SAN FRANCISCO

Located in the outskirts of Santiago de Chile, the *campamento* San Francisco was formed in 1975 by no more than 15 brick-makers that cared after the plot, which belonged to a group of priests. The campamento then kept on growing to house more than 500 people. The growth of the campamento is due to the centralized system of Chile. Almost all of the inhabitants come from the south of the country in search for better opportunities in the capital for them and their children.

The size and limits of the campamento have evolved over time but the morphology has stayed the same, similar to a medieval town. The aggregation of houses seems to follow its own laws and patterns. In reality, streets were given names and marked by the inhabitants in order to preserve them.

The morphology of the campamento is also greatly induced by the construction type. The global plan is very free because almost all of the houses are built on a prefabricated mediagua base (fig. 26). For security reasons the houses are built behind an *antejardin* (front garden), that is augmented with a patio, between their house and the neighbors'. Their exterior space is totally enclosed by barriers both for security and for marking the limit of their parcel.

fig. 12 - Programs in San Francisco

-  Church
-  Store
-  Techo library
-  Detailed plan fig. 28
-  Waste

20m



“THE POLICE NEVER COME HERE”



fig. 13 - the barricaded atmosphere of San Francisco's public spaces

Due to the constant insecurity, the inhabitants immediately build gates around their parcel upon arrival. It results in public spaces that are blocked from the visibility and control from the house and hence it does not improve the global security.

Houses are often turned into ashes by fires that are ignited by faulty electrical connections. NGOs usually give emergency houses (fig. 26) to replace these homes. One of the major issues of the campamento is clean drinkable water. There are no water connections and so the inhabitants are dependent on a municipal truck that comes once a week at the best of times, but often every two weeks. The truck comes in front of each house that has a plastic tank to fill. The clean water often ends up contaminated and the children get sick because of it.



fig. 14 - a fire in the campamento due to bad electrical connections



fig. 15 - residual spaces become local dumps

PROBLEMS IN SAN FRANCISCO

 TRASH

The campamento was built on a dump. It is still being used as one by some of its inhabitants and neighbors.

 ERRANT DOGS

There is an important number of abandoned dogs and it brings sanitary issues.

 EDUCATION

A lot of children do not go to secondary school. The ones in the neighborhood does not offer quality education.

 WATER

Drinking water comes by a municipal truck once a week. It gets contaminated and the children are often sick. There is no sewer system, toilet pits are dug in the ground.

 FIRE RISKS

There are frequent fires due to bad pirate electrical connections from the public network.

 SECURITY

The police never come to the campamento. They only come when they are looking for a stolen car.

problems pointed out by Roxy, the campamento assembly president

VARIOUS ACTIVITIES

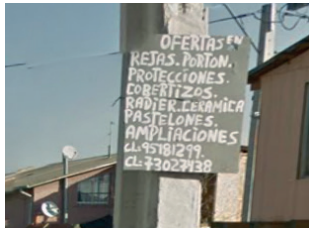


fig. 16 - light construction



fig. 17 - bricks for sale



fig. 18 - church interior



fig. 19 - bike repair



fig. 20 - kitchen utility repair



fig. 21 - ice cream store

The campamento houses some public activities. It has four churches (two are abandoned) and a small library built by the NGO Techo in a mediagua. A lot of the inhabitants live of recycling steel and cardboard that they pick up with little carts in the neighborhood. The inhabitants offer a variety of services both for the people living in the campamento and the ones of the neighborhood. as their commerce is informal, they can sell their products and services cheaper than on the regular market. For example, Juan can sell his bread 600 instead of 800 Cl\$. There are also informal advertising, in the campamento and on its borders, that offer services (construction), repairs (bikes, cars, utilities) or sales (construction products, groceries). The inhabitants that do not work inside the campamento mostly work on construction sites in the region.



fig. 22 - "Juanito", one of the campamento convenience stores



fig. 23 - Thelma in the store she owns with her husband Juan, with its security system

“HOUSING ISN'T THE BIGGEST PROBLEM”



fig. 24 - security is an issue, openings are reinforced



fig. 25 - the exterior patios are extensions of the house for living, eating and washing

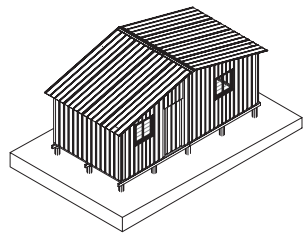


fig. 26 - mediagua axonometry

The majority of the houses built in the campamento have a mediagua as a base. They are prefabricated wooden houses of 6 by 3 meters, supposed to be a dimension that can house a family in emergency situations. Although they were conceived as temporary structures, they are given throughout Latin America by NGOs and municipalities to better the living conditions in asentamientos.

INDIVIDUAL SCALE THE HOUSE



fig. 27 - a three children bedroom in 2 by 3 m

Houses in campamentos in Chile are mainly built of wood and recycled steel. The inhabitants fear forced evictions and hope to be beneficiary of a new housing project, so it is very rare to find constructions in concrete or bricks. Roofs are made of corrugated steel sheets that always end up being rusty and having water infiltrations in the winter season. For security reasons, rooms rarely have windows. When they do, they are secured with metal bars or lockable shutters. The parts of the house that are built from a mediagua (fig. 26) are lifted off the ground by 10 centimeters. The floors of the extensions are not or less elevated (0 to 5 cm) and are built out of plywood or rugs directly on the ground. This causes thermal in-comfort, hygienic issues and numerous problems when there are important rainfalls.

Nevertheless San Francisco campamento inhabitants appreciate the possibility to have flexibility and outdoor spaces. One of them said “housing isn’t the biggest problem”. Their problems are more of first necessity: reliable electricity, clean water and better sanitary conditions.

fig. 28 - house survey

- 1 chicken coop for egg production
- 2 construction and repair material
- 3 wash machine
- 4 outdoor shower
- 5 water barrels for extra water space
- 6 water towers that are filled by the truck
- 7 television
- 8 car repair workshop
- 9 children pool and bathtub
- 10 wooden power pole
- 11 prefabricated mediagua base
- 12 auto constructed extension



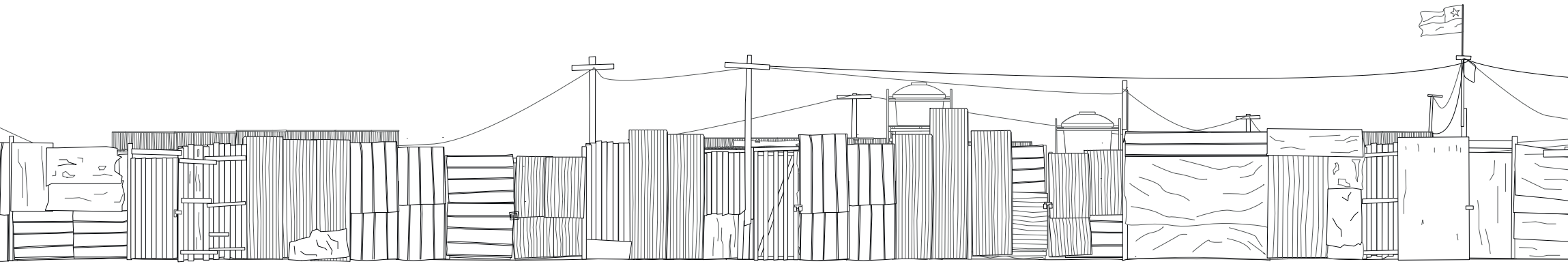


fig. 29 - elevation from the street

1m

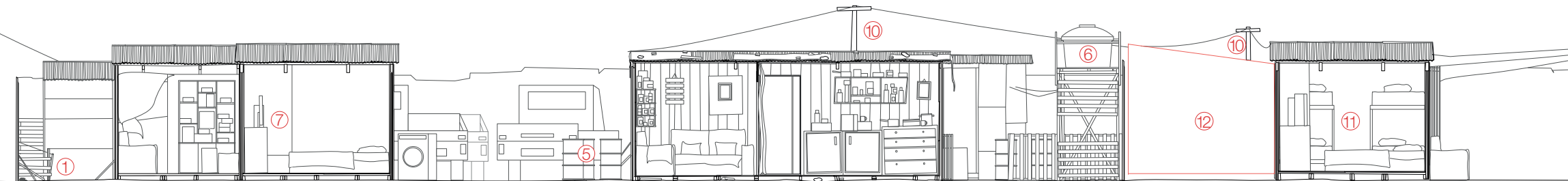
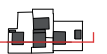


fig. 30 - section



QUALITIES IN SAN FRANCISCO

EXPANDABLE HOUSE

From a 18 m² “emergency” mediagua base, it is possible to expand the dimension of the house according to the needs of the family. The parcels usually have enough outdoor space to use it for various activities.

MULTI-USE HOUSING

The flexibility of the house allows for it to accommodate various activities indoor and outdoor. These go from churches to shops to repair workshops and recycling space.

SOCIAL LIFE

The campamento is organized in an assembly with a president, vice-president, secretary and treasurer. They meet every month to discuss the problems and try to find solutions. There are a lot of family ties and everyone knows each other producing social control that also brings some security.

qualities pointed out during discussions with inhabitants

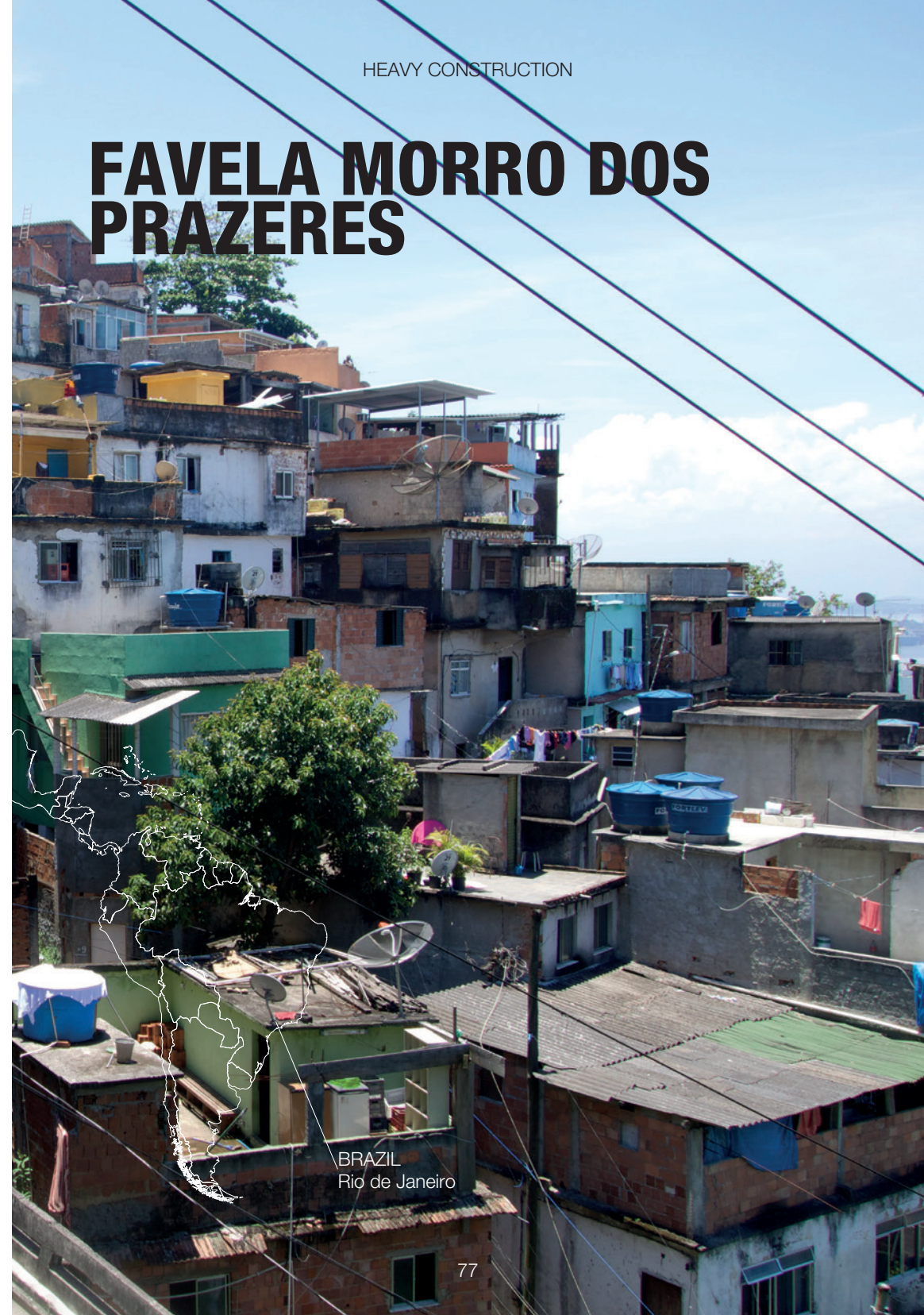
SLUM STUDIES #2

HEAVY CONSTRUCTION

Heavier constructions can result from slums that have been formed further in the past. They can also come from the available local cheapest construction material and from local construction customs. Heavier construction is also more likely to happen on land where forced eviction is not likely to happen in the near future or on the contrary to make it harder by building stronger.

By their construction type, these slums usually offer better living conditions but infrastructure and other interventions are more complicated to retroactively implement. The structural security of the existing buildings should also be verified.

FAVELA MORRO DOS PRAZERES



BRAZIL
Rio de Janeiro

NAME
Morro dos Prazeres

COUNTRY, CITY
Brazil, Rio de Janeiro

POSITION
22°56'05.0"S
43°12'17.0"W

OF HOUSES
643

OF PERSONS
2 136

FORMATION YEAR
1940

SURFACE
48'871 m²

Instituto Pereira Passos - IBGE (2010)

CITY SCALE RIO DE JANEIRO

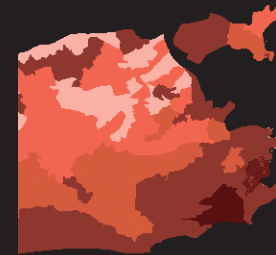
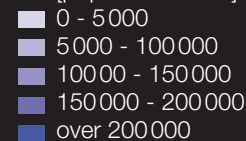


fig. 31 - Residential
value [US\$ / m²]



fig. 32 - Density
[population / km²]



In Brazil, favelas are known since as early as the 19th century where they began in Rio de Janeiro.⁷⁵ The myth around the origin of the word comes from an episode of the Canudos war (1893-1897) in the northeastern state of Bahia. The victorious soldiers came to Rio de Janeiro and settled on a hill they renamed Morro da Favela as a tribute while waiting for their pay.⁷⁶ From a specific place, it then became a common word for precarious homes in squatted land in Rio from the 1920s to then be used nationally in censuses in the 60s.⁷⁷

With the growing urbanization of Rio, favelas were being built on the unconstructible or protected hills of the city. They are constructed on denuded granite hilltops with unstable soil that often result in deadly landslides.⁷⁸ Moreover due to a lack of squattable land and a growing demand for room rentals, favelas tend to expand vertically with buildings that reach four to six stories.⁷⁹ Due to their complicated accessibility for the authorities but their good location, favelas quickly became lairs for drug cartels that starting enclosing and controlling these cities within the city.⁸⁰ The situation went out of the state control in the 80s until it started a “pacification” process in December 2008.⁸¹ Yet less than 4% of Rio’s 1071 favelas are today under the state’s control.⁸²



NEIGHBORHOOD SCALE SANTA TERESA

In the metropolitan region of Rio there are around 1 100 favelas that house more than 2 million inhabitants, more than 12% of the population.⁸³ Although the “favela image” is on a hill, half of the ones in Rio are on flat land.⁸⁴ They were also formed around peripheral social housing projects such as the Cidade de Deus. To compensate the project’s inadequate housing conditions, the inhabitants informalized and extended the serial housing units that became unrecognizable.⁸⁵

In the municipality of Santa Teresa, out of 40 926 inhabitants, 12 841 live in favelas⁸⁶ (over 26 000 according to other sources).⁸⁷ The favela dwellers mostly came from the Nordeste region, sometimes up to four generations ago. Santa Teresa used to be an upper-class residence neighborhood but as favelas grew around it, the houses were abandoned and artists later migrated to them. It is now an artsy-touristic hype neighborhood with art studios, galleries, museums and an antique tram in repair that connects to the center of Rio. The location of the favelas of Santa Teresa underline the importance of well located housing, connected to work opportunities in the center. In 2011 the favelas of Santa Teresa were regained from the drug traffickers by the authorities through Police Pacification Units.⁸⁸

fig. 33 - Programs in
Santa Teresa

- Favela
- Favela with UPP
(Police Pacification
Unit stations)
- Kindergarten
- Elementary school
- Secondary school
- Hospital
- Health center
- Fire station

200m



San Francisco
Community

COMMUNITY SCALE FAVELA MORRO DOS PRAZERES

The favelas on hills in Rio and particularly the ones in Santa Teresa, have incredible views on the city and the sea surrounded by vegetation. It is a quality that comes out of all of the questioned inhabitants. Although the topography offers these views, it also causes problems with waste and transportation. Vehicles can only reach the middle of the favela. The rest can only be accessed by foot. Large containers can be found only at the bottom of the favela while a few small trashcans are placed up to the middle. It is also this strategic point that marks the territory separation between the two armed factions that are still present “Comando Vermelho” and “Amigos dos Amigos”. The community has to deal with the different authorities and actors in the favela that range from special military forces to drug traffickers to NGOs and associations. The latter and the community have however been able to transform the favela into a cultural center by organizing various events. According to IBGE census, all of the houses have access to adequate sanitation and water.⁹⁰ The water is pumped from the network to a water tower on the highest point of the favela. It is then released once a week and stored in plastic tanks on the roofs of most houses.

fig. 34 - Programs in
Santa Teresa

- Road
- Foot path
- Favela water tank
- Sports field / Playground
- ✚ Church
- \$ Store / Restaurant
- ! Emergency meeting point
- U UPP police station
- Detailed plan fig. 40

20m



“THE ELDERLY CAN’T EVEN GO TO THE CITY...”



fig. 35 - a typical stairway that connects the house entrances

The biggest problem mentioned by the inhabitants is accessibility and pathways. All of them are dreaming of a funicular, escalators or at least better stairways. It is a complicated journey just to come back home with groceries or to move furniture in or out. Furthermore, the grey water evacuation system is not adequate and the stairs become torrents during storms that end up wrecking houses and causing landslides. In 2010, 35 people were killed by a landslide caused by important rainfall.⁸⁹ This complicated connection also reinforces the separation between the ones living in the favela and the ones living in formal houses at the bottom of the hill. The residents of Morro do Prazeres still feel Rio’s segregation between “Morro” and “Asfalto” (hill and asphalt, favela and formal city). Employers are reluctant to give them jobs by prejudice and also because when living in a favela you do not have a formal address.

...TO RECEIVE THEIR PENSION”



fig. 36 - the constructions are built in different steps with vertical superpositions



fig. 37 - with the help of a local NGO, the community has built a playground

PROBLEMS IN MORRO DOS PRAZERES

⚡ TRANSPORT

Circulation inside the favela is a crucial point. The paths and stairs are steep, slippery and in shabby condition. It causes problems for the elderly and for deliveries.

⚡ WASTE

There is no infrastructure for collecting waste. It is not organized for people to drop it off on their way to work. It is accumulated on the higher parts and when it rains, waste spreads throughout the favela.

⚡ ROADS & GREY WATER

There are no real roads that go from the bottom to the top of the favela. The rain water evacuation systems are also in very bad condition so when it rains, torrents flow down the paths and into some of the houses.

⚡ ELECTRICITY

There are often power cuts in summer due to illegal electrical hook-ups, called “gatos”, mainly for air conditioning. In pacified favelas, this issue is starting to be solved by the installation of electric meters and relays.

problems pointed out by Rosemary and Sergio, residents of the favela

VARIOUS ACTIVITIES



fig. 38 - Orlando the mailman



fig. 39 - Sergio in one of the favela's restaurant



fig. 40 - Rio's highest soccer field



fig. 41 - community radio



fig. 42 - grocery shop



fig. 43 - outdoor party in preparation

In Morro dos Prazeres, such as in most Brazilian favelas, the community is well organized. Orlando (fig. 38) is an emblematic figure who is a soccer coach for the youth, he also teaches them to recycle and tries to solve the previously mentioned address problem by distributing mail in the favela. There is also a local NGO “Equilibrio Sustentavel” that created a community radio to help connect the top and bottom territories of the favela for better dialog and to avoid violence. There are numerous restaurants and convenience stores and also a samba school that organizes shows. Although the authorities have officially taken control of the favela, drug traffic is still present in the favela, just a little less visible. Each gang still has a “boca de fumo”, a point where youngsters sell drugs to people from the city and the favela. All of these activities are of course out of reach of the formal economy and of the state tax system.



fig. 44 - Silvia, originary from the Nordeste region, cleaning up her storefront



fig. 45 - she came nearly 40 years ago and has lived and worked since then in the favela



fig. 46 - the quality of the rooms vary widely from luminous to dark with water infiltrations



fig. 47 - the construction is modest, practical and has everything the inhabitants need

INDIVIDUAL SCALE THE HOUSE

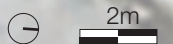


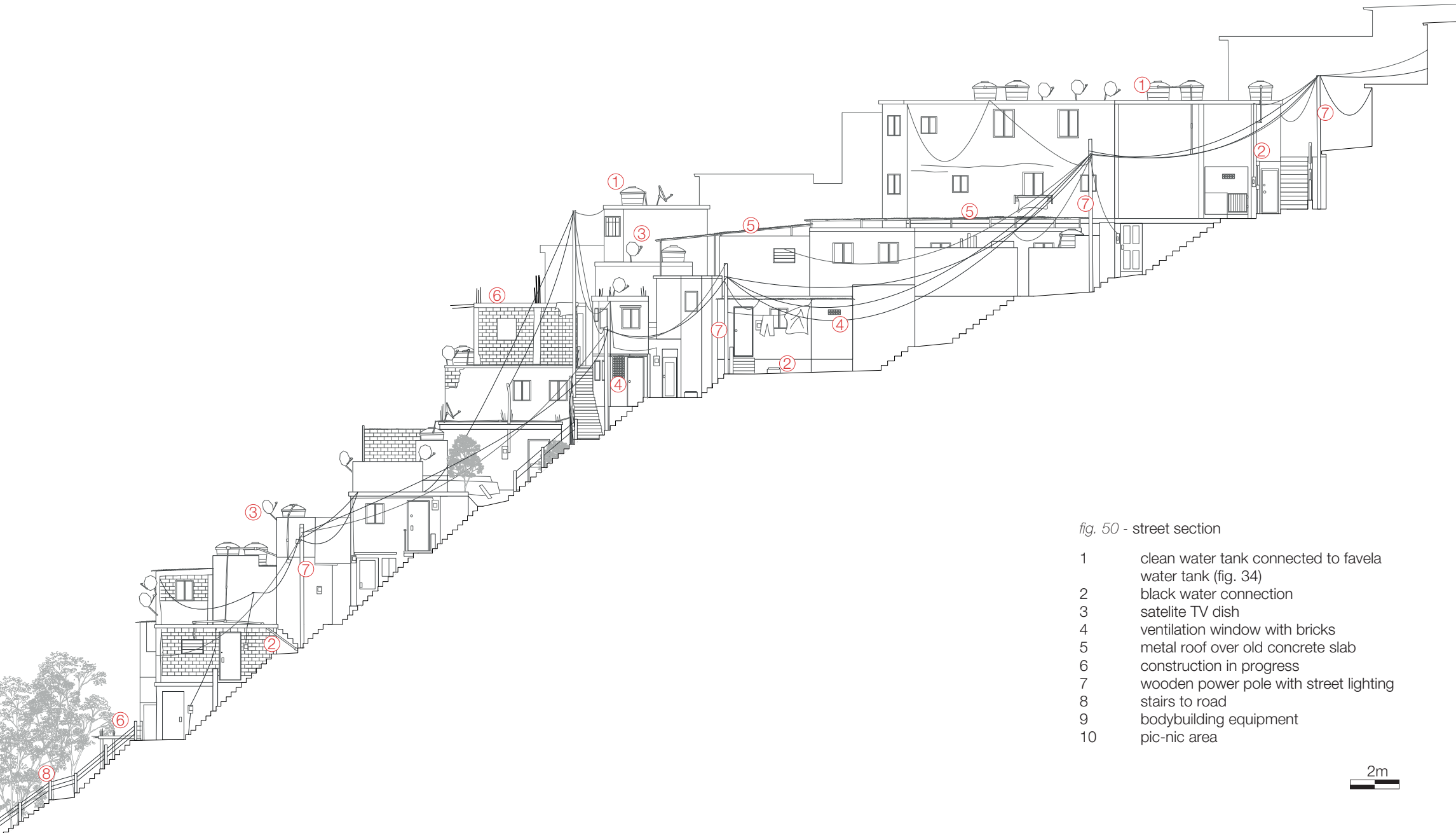
fig. 48 - the project "Caminho do grafite" led by a local graffiti artist repainted the favela

Perhaps even more than in the campamento San Francisco, houses in Morro dos Prazeres are not a problem for the population. The interrogated inhabitants said their house was convenient, well located and had a very nice view. The houses offer the flexibility to work and live in the same place. Sergio (fig. 39) cooks "salgados" (salted starters) in his kitchen that he sells on the street in front of his house while Silvia (fig. 44) has built a storefront for a convenience store at the bottom of her house. Most of the constructions are made from a concrete structure base (domino type) with a brick fill-in and metal or concrete roof. The interiors are usually plastered and exteriors are left apparent. The "Caminho do grafite" project has repainted with murals an important number of houses along the paths often making them more luminous. In summer it can get extremely hot in the houses so numerous inhabitants resort to using air conditioning, which overloads the electric network.



fig. 49 - street plan





QUALITIES IN MORRO DOS PRAZERES

● LOCATION

In spite of its security problems the favela is an enjoyable place to live. It is well located in Rio and Santa Teresa. The views from the favela and most of the houses are breath-taking.

🏠 HOUSING

The houses are convenient. It is possible to change them over time for different occupations. A lot of people have little shops and workshops in their home.

👤 SOCIAL LIFE

Everyone knows each other and the neighborhood ties are strong and helpful. There are various public places where the inhabitants can meet.

👤 CULTURAL PROJECTS

Both the favela Morro dos Prazeres and the neighborhood of Santa Teresa are becoming cultural centers. In the favela some cultural manifestations such as the “Caminho do Grafite” (murals all over many houses of the favela) and “Black Santa” (a black music festival) are bringing people from outside to visit.

qualities pointed out during discussions with inhabitants

III. STRATEGIES

STRATEGIES, POLICIES & IMPACT

KIT OF PARTS

NEW CONSTRUCTION & AUTO CONSTRUCTION

Discussion with TECHO

INCREMENTALITY

Discussion with Elemental

INFRASTRUCTURE

Discussion with Urban-Think Tank

URBAN PLANNING & JOB GENERATION

Discussion with Fabulous Urban

SECURITY OF TENURE

Discussion with UN-Habitat

With the global approach and site-specific methodology developed in the previous two chapters, it is possible to have a precise understanding of the context and recurring problems. By doing so, the context is set for interventions. Six main tendencies in projects that intervene in informal settlements have been identified as main strategies. To better understand them and their scope, they are analyzed through discussions with professionals that use them in projects. Illustrated by examples, they are also compared with the policies of five Latin American countries in order to see if the governments enforce them. The chapter finishes with a discussion on security of tenure and studies how the policies listed in other strategies deal with it.

STATES MAKE POLICIES THAT PRODUCE A CERTAIN TYPE OF PROJECT.

WHAT IS THE LINK BETWEEN THE POLICIES OF A COUNTRY, THE PROJECTS AND THEIR IMPACT?

STRATEGIES

^{n.}
/ˈstrætɪdʒi/

- a. *The art of a commander-in-chief; the art of projecting and directing the larger military movements and operations of a campaign.*
- d. *In (theoretical) circumstances of competition or conflict, as in the theory of games, decision theory, business administration, etc., a plan for successful action based on the rationality and interdependence of the moves of the opposing participants; also transf.*

STRATEGIES, POLICIES & IMPACT

STRATEGIES

To meet the needs of the population living in slums, NGOs, architects and governments develop different approaches and strategies. These strategies work at different scales defined in the slum study methodology. They also aim at impacting the different problems defined in the introduction. These strategies are identified as main tendencies in projects that intervene in informal settlements. The chosen ones are not exhaustive but are representative of the different scales of projects that are developed. The goal is to have a better understanding of the different strategies and their scale of impact through discussions with professionals that intervene using these strategies as well as a brief analysis of projects that illustrate them.

POLICIES

The developed strategies respond to effective needs of the population. However they are not all incentivized by governmental policies. As will be illustrated in the following list of examples of policies in Latin America, most of them concentrate on the house scale. These housing policies incite the production of adequate housing compared to the precarious situation slum-dwellers often have. Yet their major flaw is to not take the urban scale into consideration or at best only considering the location. As will be argued in most of the following discussions, the urban scale is critical. The major concern is to not reproduce failed social housing projects that end up turning into a new problem for the country. The construction of poorly developed concentrated housing for the poor, on the long term, leads to a segregated city with similar social problems to the ones in slums (fig. 51).

A more exhaustive and rigorous research into the governmental policies of different countries and their scales would however be necessary in order to suggest modifications and improvements in them. As a first

step, policies implemented by five Latin American countries are listed and briefly analyzed. The goal is to compare them and their level of impact to the strategies and projects to determine if they are enforced by governmental policies or not.

IMPACT

Impact has also been a topic of discussion with all of the interviewed professionals. However its evaluation and prediction would require a research on its own. As an entrance point to the subject, the strategies and projects are put in relation with the identified problems in slums to understand on what level they are addressed.



fig. 51 - a typical social housing project from the 80s in San Bernardo, Santiago de Chile. It houses more than 250 families in less than 35 m² per family

STRATEGY	STRATEGY SCALE	IMPACT LEVELS	DISCUSSION	COUNTRY	LINK WITH POLICY
Kit of parts	House	🏠	(-)	Mexico	Direct link with: “Programa vivienda digna”
New Construction & Auto construction	House and Community	🏠 ⚡	TECHO	Chile & Uruguay	Direct link with: “Programa para cooperativa de ayuda mutua”
Incremental	House and Community	🏠 ⚡	Elemental	Chile	Direct link with “Fondo solidario de elección de vivienda”
Infrastructure	Neighborhood	🛣️ 👤	Urban-Think Tank	Venezuela	No direct link
Urban planning & Job generation	Neighborhood and City	🛣️ 👤	Fabulous Urban	Brazil	No direct link
Land tenure	House and City	📍	UN-HABITAT	various	Usually linked into housing policy programs



- 🏠 housing & construction
- 🛣️ infrastructure & services
- ⚡ water & electricity
- 👤 density & size
- 📍 land
- 👤 social

As can be seen through this table, the strategies that concentrate on the house and community scales are the ones most taken into account in policies.

POLICIES

MEXICO⁹¹

🏠 VIVIENDA DIGNA

Through the Dignified Housing program the Secretary for Agrarian, Territorial and Urban Development grants subsidies to families living with inadequate means, for the purchase, construction, expansion or improvement of a house. A notable part resides in the housing improvement point. It identifies different intervention strategies, that can be seen as a kit, for which subsidies in cash or material are allocated: the construction of a solid floor inside houses with earth ground, the installation of a water tank, the construction of dry toilets, the construction of metal or concrete roofs. It can also provide materials to build a concrete slab base for a family to build on.

⚡ PREVENCIÓN DE RIESGOS EN LOS ASENTAMIENTOS HUMANOS

The Risk Prevention in Informal Settlements program helps the ones living in informal settlements that are endangered by geological and water risks through infrastructure construction that depend on the site and risks.

⚡ RESCATE DE ESPACIOS PÚBLICOS

The Public Space Rescue program contributes to improve the quality of life and security in marginalized neighborhoods. It wishes to give back public spaces to communities by making them safe for leisure.

STRATEGY: KIT OF PARTS

Strategies can be developed by studying, mimicking and developing what informal settlement dwellers use as construction methods and strategies.⁹² The kit of parts and incremental strategies can be seen as so. The communities living in informal settlements and precarious conditions find independent housing solutions that can evolve over time. Slum dwellers are usually the owners, investors and builders of their homes.⁹³ This allows them to upgrade and adapt their construction over time with different modules that respond to their needs and economical resources.

Policies taking this into consideration can be seen in various countries such as Bolivia, Mexico and Peru among others. This strategy is of course active in countries that are trying to upgrade on-site, either as a transitional phase or to bring the construction level to a more permanent stage. The policy can incentivize upgrading with different levers such as financial, material, knowledge or labor resources. For instance Mexico is allocating funds for some of the modules whereas for others it is directly providing the actual sand, cement and other materials for the families to auto upgrade their house. Other encouragement options are possible and vary depending on the countries such as low interest rate loans and micro-credits, providing instruction guidebooks, workshops or on-site construction feedback by professionals.

In the following pages, important points to consider while developing a kit of parts will be examined. The different modules of the Mexican “Vivienda Digna” policy will also be illustrated in order to grasp the scale of each of them and how they could be assembled. Unfortunately the Mexican Secretary for Agrarian, Territorial and Urban Development⁹⁴ has not yet documented the projects done through this policy.

Illustration of the different modules of the Mexican “Vivienda Digna” policy, in the housing improvement category. Subsidies through the form of funding or material can be granted for the following interventions:



fig. 52 - “Piso Firme”: the construction of a solid floor inside houses with earth ground



fig. 53 - “Techo de lámina o loza de concreto”: the improvement of roofing by metal sheets or a concrete slab

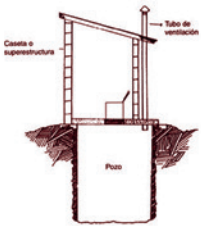


fig. 54 - “Letrina seca”: the construction of dry toilets for the house



fig. 55 - “Tinaco”: the installation of a water tank for the house



fig. 56 - “Pie de casa”: materials to build a concrete slab base for the family to build a house on



fig. 57 - “Escrituración”: juridical support for the regularization of land tenure

“LIKE THE AD HOC NATURE OF SLUM CONSTRUCTION, THE KIT-OF-PARTS IS BEST WHEN MODULAR AND FLEXIBLE.”⁹⁵

According to the kit of parts strategy developed in Urban-Think Tank’s “Slum Lab Informal Toolbox”⁹⁶, it should meet with a few criteria in order to work in an informal settlement environment. The parts “must not be easily removable, materials must be cheap and they must be capable of working on a small footprint.”⁹⁷

Being aware that a kit of parts strategy that has light, easily removable parts may end up being disassembled and sold seems to be an important, sometimes forgotten factor, depending on the context the project is built in.

To meet with the need for cheap and modular materials, standardized industrial materials could be an option. The materials have to be easily available, affordable and not complicated to assemble. It is however crucial that the materials coordinate with the local cultural construction methods and with the construction skill of the inhabitants. The goal of the kit of parts strategy is to be easily built and appropriated by the inhabitants. The chosen materials should of course be able to respond to the specificity of the site, its climate, topography, type of terrain, flood risks as well as other natural disaster risks.

In this strategy it seems that a part of innovation can come from the reinterpretation of uses of typical construction materials. It is already happening very locally in every informal settlement. It could be beneficial to share this developed knowledge and push it even further.

POLICIES

URUGUAY⁹⁸

PROGRAMA PARA COOPERATIVA DE AHORRO PREVIO / DE AYUDA MUTUA

The program for cooperatives seeks to help families access a housing solution through a loan to the cooperative that they can reimburse with a preferential interest during 25 years. To be eligible for the loan there must be between 10 and 50 families in the cooperative that do not own more than a certain amount of money and do not own a house.

The members of the cooperative have to be willing to engage efforts in the construction process and/or contract a third party to do so. The difference between “ahorro previo” and “ayuda mutua” resides in the amount of work put into the construction by the families. In the “ahorro previo” (prior savings), families have to pay 15% (about 10'000 US\$) of the house subsidy, whereas in the “ayuda mutua” (mutual aid) families do not pay a first amount of the subsidy but must commit to providing 21 hours of weekly work on the construction site per family. The newly built neighborhood is then administered by the cooperative.

PROGRAMA DE AUTO CONSTRUCCION

A family that owns land or with explicit authorization of the owner can apply for the auto construction loan program. The government provides basic formation to construction as well as a manual and a social worker and an architect follow the construction process.

PROGRAMA DE MEJORAMIENTO DE BARRIOS

The neighborhood improvement program works both on the development of infrastructure at the neighborhood scale and house scale and on the regularization of land tenure. It finances for example the implementation of water and sanitation as well as electricity and urban infrastructure for the community.

STRATEGY: NEW CONSTRUCTION & AUTOCONSTRUCTION

The construction of new housing provided by the state has been an important part of the local politics in Latin America since the 1960s. There has however been an enormous amount of these social housing projects that have produced more segregated cities, with their problems. The previously mentioned “blocks” in Santiago (p. 57), the Cidade de Deus⁹⁹ in Brazil or even in another context the *banlieues* in France¹⁰⁰ are some examples. On the constructions of new housing UN-HABITAT notes that the “Experience accumulated over the last few decades suggests that in-situ slum upgrading is more effective than resettlement of slum dwellers and should be the norm in most slum-upgrading projects and programmes”.¹⁰¹ The eradication and relocation of informal settlements often destroys social networks and proximity to employment opportunities. Moreover it also destroys existing affordable housing.

However, as argued by TECHO in the following discussion, in some contexts, in-situ upgrading is not possible. In some cases it may be because the owner of the land will not sell or because it would be too complicated to bring infrastructure or because the original settlement is not well located. Moreover, although housing policies concentrate primarily on the unit, they usually also bring infrastructure, such as roads, electricity, water and sanitation.

Chile and Uruguay have similar policies (p. 120) apart from auto construction possibilities. The NGO TECHO that started in Chile is now also active improving the conditions of the poor in Uruguay. They build new construction social housing with the help of state subsidies through participative processes with the inhabitants. In the following discussion we will understand the issues of providing housing as well as examine the differences between the policies in Chile and Uruguay.

PROJECT El Esfuerzo Unido Arauco, Chile, TECHO, 2010



Although TECHO has been active in Uruguay since 2013, their local construction department has only opened recently and has not built any project yet. For this reason, the analyzed project is from TECHO Chile. The new construction projects in both countries have similarities and the differences are explained in the discussion.

fig. 58 - the projected (red rectangle) is located in the city of Arauco, less than 1 km from where the campamento was (yellow circle). The original campamento was heavily struck by floods following the 2010 earthquake in Chile. The project was part of reconstruction projects.

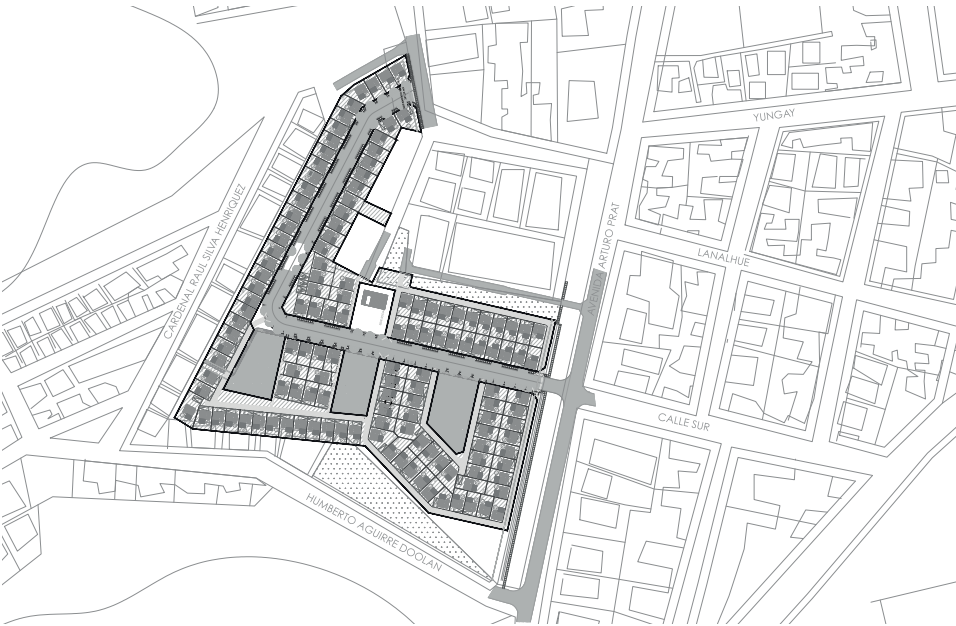


fig. 59 - although the urban form is a condominium property type, it tries to insert itself and connect with the rest of the city. It also offers public spaces in pockets along the road. However the neighborhood population tried to oppose themselves to have common public spaces because they did not want to have ex-campamento dwellers as neighbors...

“LAND PROPERTY OFTEN DETERMINES THE STRATEGY”

TECHO

EXTRACT FROM SKYPE DISCUSSIONS WITH TECHO CHILE AND TECHO URUGUAY

Montevideo / 20.11.2014 (translated from Spanish)

Santiago de Chile / 29.12.2014 (translated from Spanish)

TECHO is a latinamerican NGO that started in Chile in 1997. It is formed by groups of students young professionals from various fields (architects, engineers, lawyers, social workers...) the ideal to suppress poverty and inequality. With students and volunteers, they start building emergency housing in slums and following natural disasters. They have then continued by building “definitive housing” (new construction social housing) for people living in precarious conditions through participative processes and also focus on various social aspects (education, professional training...).

DM

The projects TECHO develops are new construction housing. Could an on-site upgrading strategy be an alternative to destroying and constructing? It may be faster and cheaper by having a bigger involvement of families in the construction (for example with micro credits, auto construction, kit of parts). Or would it bring more problems of implementation?

TChile

Generally TECHO does on-site upgrading through new constructions. Upgrading on-site is always preferable but not always possible. The campamentos are located in any kind of land, regardless of road access, electricity, sewage systems or water distribution. TECHO studies the campamentos to define what strategy would be possible. Nevertheless we have already had two cases of families who received a land title in the regions of Tarapacá and Coquimbo. However, regularizing land tenure does not involve construction of new homes, it just makes them owners of the land. Then, they can apply for another subsidy or build their homes themselves. On-site upgrading requires a complex study of the land and often great efforts to install



fig. 60 - the government subsidy now requires all social housing projects to have a playground, shared green spaces and a community house. TECHO has developed partnerships with sponsors to receive playground games and trees and have more budget for construction.



fig. 61 - a basic structure and a concrete slab are ready for the inhabitants to build expansions. The repetition reduces construction costs.

... basic services (water, electricity and sewage). It also depends on the number of families, because it is not always possible to regularize all the parcels and it may be necessary to relocate some families or move to a new construction densification project.

This also complicates the social process, as the community and each family must agree with the decisions that are taken.

To come back to new housing constructions for families who live in campamentos, we believe that providing them with formal electricity, clean water and water evacuation systems are already a way to significantly improve their living conditions.

DM

In Chile, there are however no subsidies for auto construction and improvement of the campamentos by the families, why?

TChile

So far, social housing has been assumed by the state and has then been externalized to an EGIS, Entidad de Gestión Inmobiliaria Social (Social Housing Management Unit), like TECHO. It is probably a way to ensure the quality of the construction. There are subsidies for improvement or expansion of housing, but they only apply for families who own land. Land property is the main factor in the application of this type of subsidy, since the state cannot finance construction on illegally occupied land as is it could be demolished imminently. In the housing policy modification that will happen soon, a subsidy for assisted auto construction will be included, in which families can construct houses in their own land with advices of an EGIS in a similar way as in Uruguay.

DM

Are the strategies different in Uruguay?

TUruguay

In Uruguay the situation is different also because the type of informal settlements are different. In Chile they are often built from a mediagua (cf p. 68) with extensions in light construction materials. In Uruguay they are built with concrete bricks and are generally of quite good construction quality. This is mostly because auto construction is not so restricted in Uruguay whereas in Chile families do not want to invest in construction materials when they know their house could be demolished at any time. It is also maybe something cultural; in Uruguay it seems normal to auto construct your house with heavier construction materials. And so the families in Uruguayan informal settlements really do not want the house they invested and worked on to be demolished and want to continue living in it. This is why the majority tries to apply to the Programa de Mejoramiento de Barrios

	... (Neighborhood Improvement Program) to improve the infrastructure that is missing for a better quality of life. Once the infrastructure is brought in, water, electricity and land tenure is regularized. Here also land property is a factor that determines what policy can be applied. In Uruguay there are 1589 informal settlements of which 60% are on public land. These can apply to the Neighborhood Improvement Program. The other 40% would have to apply to the cooperative program for new housing.	
DM	About the land, what are the possibilities of accommodation for families during new constructions when the project is built on the same site as the informal settlement?	
TChile	When this happens, coordination with the municipality is very important. We usually build a « temporary campamento » in an unused surface near the original one. TECHO collaborates with its volunteers and the construction management. The municipality helps to search the land. We must get permission from the owners. In some case it has been easier to find lands from the municipality or some kind of administration. Each family signs an agreement to leave the temporary home when the new built houses are delivered. This transit camp is demolished after the families move.	
DM	To what extent do the regulations to obtain the subsidy influence the type of projects you can do, do they leave enough space for innovation and to adapt to the different situations of the country and why are they so strict?	
TChile	The problem is again the budget. The subsidy amounts are fixed and low, thus they can only provide for the minimum standard required by housing policies. Better standards would need more important subsidies. The innovation freedom exists when there is enough money for it. For example, every construction system used in social housing must be in the MINVU (Ministerio de Vivienda y Urbanismo, the Chilean Ministry of Housing and Urbanism) official list. If you want to use other materials they must pass fire resistance, thermal insulation and acoustic insulation tests. Moreover new construction systems will difficultly find enough qualified labor. Which would result in higher construction costs and again the subsidies would not be sufficient.	
DM	In campamentos, there is a lot of flexibility of use. Do new social housing projects keep this possibility?	

TChile

In social housing complexes, the community can decide what kind of activities are permitted: store, workshop, daycare, etc.

DM

For TECHO, what are the indicators showing that a project worked?

TChile

There are two aspects in which a project may work or fail: the technical side and the social side. Regarding the technical aspects, the indicators may be: well maintained green areas, a community center with permanent use, housing that solve the needs of the families, etc. Regarding the social aspects, community organization is mainly what is to be evaluated. Surveying whether community projects are organized or not, if the community is organized for the payment of common expenses, if they can solve their problems of coexistence, if it is a safe neighborhood, etc. There are no objective data yet. TECHO is preparing a study of these indicators in the projects we have built.

DM

On the social aspects, what are the differences you see with the cooperative program in Uruguay?

TUruguay

In the "Cooperativa de Ayuda Mutua" the families have to put 21 weekly hours of construction during the whole periode of the construction. If they do not all complete them, they have to pay in cash 15% of the construction price. To accomplish it they need a very good cooperative organization. The families tend to appropriate the homes more since they worked on their construction.

DM

What does TECHO think about the urban scale and how to include new projects within the city?

TChile

TECHO spends most of the time searching for land, mainly looking for good locations to improve the condition of families in relation to the city and its services. However, many of our projects are social housing condominium; the community lives in an introverted way without much relation to its surroundings. In that sense, we have been changing as much as possible the focus of out projects towards more open neighborhoods, so that people from outside also circulate in it, and thus producing a better connected urban life. Unfortunately, the main issue is always money, because it is much cheaper to make a classical condominium (with co-ownership, either in surface or height) than subdivided parcels and individual property. ■

POLICIES

CHILE¹⁰²

🏠 FONDO SOLIDARIO DE ELECCIÓN DE VIVIENDA

This program allocates a housing subsidy to the most vulnerable families of the country. It is a contribution from the state to finance the purchase or construction of a house fit for living. The subsidy can be obtained once in a lifetime. A family can postulate alone or with a community for a collective project. The subsidy allows them to own the house and the land. They can however not sell or rent the house for the following 10 years. The subsidy now takes location into account and offers more to projects in better located lands. The families have to make a contribution of about 5% (500 US \$) of the subsidy. The project is supervised by an “EGIS”, a multi-disciplinary group that develops the project with the families. The house has to have a minimum of 42 m² with two rooms, a kitchen, a living room, a bathroom and has to be able to have an extension of 13 m².

🏠 PROGRAMA DE RECUPERACIÓN DE CONDOMINIOS SOCIALES

The social housing recuperation program attends social housing condominiums that have deteriorated over time. It strives to improve the living conditions in the housing.

🔧 PROGRAMA DE MEJORAMIENTO DE CONDOMINIOS SOCIALES

The improvement of social housing program searches to improve the quality of life in neighborhoods that present problems of deterioration of the co-owned shared spaces by establishing a committee within the community that can then decide of cohabitation rules, develops a project and postulates for subsidies. This program is applicable to all the public and shared spaces of existing social housing.

STRATEGY: INCREMENTALITY

Following the problems governments experienced in the 1960s to meet housing needs by providing complete housing, new opinions started to emerge around the concept of “self-help”.¹⁰³ This idea was developed among others by John Turner and Charles Abrams.¹⁰⁴ In his work “Housing by People”¹⁰⁵, Turner compares the qualities of auto constructed informal settlements to those of the formal social housing projects built by the state to house low income families. He was advocating that governments, and the private sector, should let the housing process be achieved by the communities themselves. Reactions have varied. Theorist Rod Burgess judges it as “naive”¹⁰⁶ while Mike Davis in the chapter “Illusions of self-help” defines it as an “amalgam of anarchism and neoliberalism”.¹⁰⁷ Datta and Jones argue that “self-help” doesn’t exist and that it is in fact paid assistance from “skilled labor”.¹⁰⁸ In any case, the debate opened up new approaches that shifted from a new construction public housing strategy to sites and services projects and in situ “slum upgrading”. Furthermore projects developed by Turner in Peru and the PREVI housing projects, built in Lima in 1978, that are still being incrementally expanded today, show the success of the strategy.¹⁰⁹

In Chile before 2006 the housing subsidy was the same for any site the project was built on. Today there is a small adjustment of the subsidy if the project is located in a town center. The project Quinta Monroy by Elemental, and the ones that followed, re used the incremental idea in order to allocate a bigger part of the budget on well located land letting the inhabitants auto construct a part of the house. As will be argued in the following discussion with Elemental, their projects that introduced and demonstrated the possibilities of incrementality in Chilean social housing projects have had an impact on the policy that now requires a possible extension of 13 m².¹¹⁰

PROJECT QUINTA MONROY Iquique, Chile, ELEMENTAL, 2003

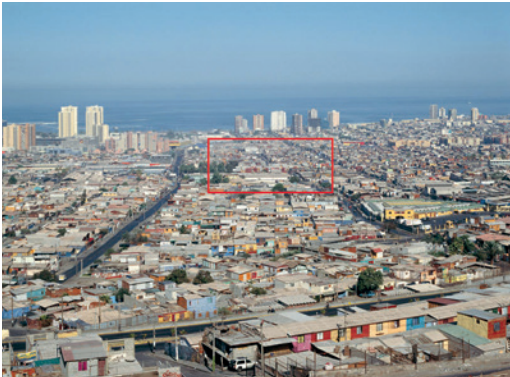


fig. 63 - one of the main goals of the project was to search a solution to stay in the same location (red rectangle) in the center of the city where land is three times more expensive than for typical social housing projects, so that the families could keep their existing social and employment networks. To do so the budget was considered as a whole and used in large extent to pay for the well located land.

Chilean housing policy from
2001 to 2006



subsidy:
7'500 US\$
savings:
250 US\$



subsidy:
7'500 US\$
savings: 250 US\$
auto construction:
X US\$

fig. 62 - instead of using the subsidy to build one small house (left), the idea is to build half of the house that the inhabitants will be able to expand over time (right)

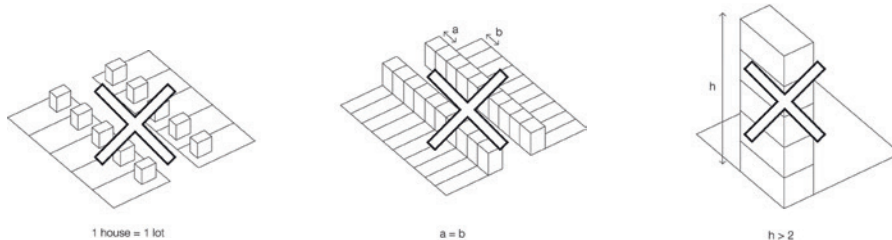


fig. 64 - the conception of the house typology is studied to allow for the most efficient growth while rationalizing the building's footprint



fig. 65 - evolution of the site, before, during the construction and after

"UPGRADING A CAMPAMENTO IS NOT POSSIBLE"

Juan Ignacio Cerda

EXTRACT FROM A SKYPE DISCUSSION WITH JUAN IGNACIO CERDA OF ELEMENTAL

Santiago de Chile / 18.12.2014 (translated from spanish)

Elemental is a do-tank that works on projects of public interest and social impact, through the development of initiatives that require coordination of public and private actors alongside participatory processes for decision-making. They see the city as a powerful instrument that has the potential to create wealth and can act as a medium through which they can generate quality of life.¹¹¹

DM

The Chilean subsidy system produces new projects and no on-site upgrading. Why is it so and what are the pros and contras you see in this orientation?

JIC

It is very important to realize that campamentos are informal; they are settlements that are on land owned by someone else. In Chile the system is a property-based subsidy, which means the state wants the inhabitants to formally own the land. To do so, the state has to pay and grant housing.

In campamentos the houses are not only on land that is not owned by the inhabitant, their stability and construction conditions are not designed to resist earthquakes. In Chile to build an architectural project it has to be approved by the government construction bylaw and local municipal regulations among which seismic resistance has a great importance. Slums and informal settlements are not authorized because they do not meet with these norms. So upgrading a campamento is not possible because of property issues and construction regulations. Therefore there are neither policies nor subsidies for improving existing campamentos in Chile, we improve campamentos but with formal new constructions that we try to build on the same site.



fig. 66 - the frame, it has a seismic resistant structure and infrastructure as well as the minimal program defined by the subsidy requirements



fig. 67 - after the expansion of the families within the structural frame. Unfortunately due to the high price of land and the size of the parcel, a big part of the public spaces is for parking

DM

You were able to push the incremental strategy in a country that has a quite strict subsidy system. Where did the idea come from?

JIC

The idea came from a very important restriction: budget. In Chile since the creation of housing policies in the 70's the price of land has been increasing but the subsidies haven't been following. So social housing would either get smaller than 40 m² or move to the periphery. Studies and experience show that a family cannot live properly in a surface of less than 80 m². So when you start reflecting on the question with a fixed subsidy you have no other choice than to innovate. Our position was to provide the 42 or 50 m², depending on the subsidy, that the state requested but our house design was capable of expanding up to 80 m². Instead of offering a small house we build half of a good one. It is a radical concept that complies with the state norms and requirements. We were not breaking the policy, but by showing the expansion possibilities, we were able to influence it. The public policies now accept expansions as part of the project. We build a frame in which families can expand their house by auto construction, but within a structure that fulfills the various regulations.

DM

One of your key factors in projects is “Harmonious growth over time”¹². How to achieve this without bringing back the limitations of typical social housing blocks?

JIC

The problem of typical social housing projects is their size. They are too small so people build extensions and they grow as campamentos, against the design. What we try to do is that the extensions grow thanks to the design. So our projects build a formal frame for informal auto-construction to be built in. These guidelines for harmonious growth over time do not produce typical social housing because families have the possibility to auto construct extensions and have a surface of 80 m². It can expand harmoniously when the frame is well conceived.

DM

To what extent can housing policies help develop effective constructive strategies and how much do they influence the type, quality and impact of projects that are built?

JIC

Public policies are a key factor in order to build concrete actions that can be implemented in the right manner. They are also beneficial by the state's high ability to finance projects. The state's financial resources are much more important than the ones of individuals.

“BY SHOWING NEW POSSIBILITIES, WE WERE ABLE TO INFLUENCE POLICIES.”

... In addition to stating regulations and fixing technical and construction standards, public policies invest public resources in concrete solutions that are realized. Without them, the solutions would come from shaky auto-construction or from the private sector. With well-designed public policies, they allow the investment of public resources in structural strategies.

Usually with housing policies, constructors try to build the smallest and cheapest unit possible to generate higher profits. When I talk about well-designed policies I am referring to policies that incite good decisions in the type, quality and impact of projects. However, policies should not restrain the architectural design, which makes it complicated to work with and does not produce good results. Fortunately, public policies in Chile have evolved in a quite positive way lately.

Do these housing policies leave space for mixed uses?

In Chile it is possible to mix other activities with housing as long as they do not occupy more than forty percent of the ground floor. So the 40% of an apartment surface can be commercial, workshop, sales... In addition the subsidy asks for community centers and green areas, which also improves the diversity of use of the neighborhood.

Looking back at your projects, would it be possible to build even less like your E-House project (fig. 82), and let the community build more and save time and money?

The Chilean public policies do not allow for it. They want us to deliver a house. In some cases we would agree on wanting to reduce the house construction to structure and infrastructure but are not able to do it within the Chilean subsidy policy system.

DM

DM

JIC

DM

JIC

Could the same incremental strategy be applied on an urban scale to infrastructure, allowing the city to grow and stage different activities over time?

We do work in city scale projects, but the incremental strategy is more complex in an urban context. We face incrementality in terms of time and coordination: if you can't do it well and fast, do it well and improvable. We conceive flexible public spaces, plazas that could be used as a market for example, that improve the quality of the city. We think that housing can improve the city because they bring inhabitants with activities. The inhabitants can then require the city to invest in the public spaces of the neighborhood. As for intermediary spaces that are neither really public nor private, the families can invest private money and municipal public funds to improve them. We are currently doing research and working on a project that aims at improving metropolitan connectivity that will come out soon.

DM

JIC

In your book “Incremental housing and participatory design manual”¹¹³ you write about “The relevance of the housing problem” in the current urban growth situation. Could you explain how you envision the link between housing and the city?

For us auto construction is really in relation with the house scale and the public space should offer the services housing needs in its proximity. The link between the housing and the city is in its location, which offers a good network of opportunities. Public spaces should offer efficient transport that brings you to your work place or network of opportunities, mixed-uses with good schools close-by, health services, public squares where the inhabitants can meet... But it is also important to keep the inhabitants in the same place so they can keep their existing social network.

DM

JIC

What is your vision for the future of campamentos and informal settlements?

We hope that auto construction will operate in institutionalized frames, that it will transform the ability of the people to build into an opportunity and subsidy into public investment. Combined with a participative process and public policies, we wish to build the frame in which the people can construct and generate the city. ■

POLICIES

VENEZUELA¹¹⁴

↑ GRAN MISIÓN VIVIENDA VENEZUELA

Since Hugo Chávez took office in 1999, providing free or affordable housing has become a centerpiece of Venezuela state policy. The GMVV's (Big Housing Mission Venezuela) objective is to build up to two million homes in hundreds of sites across the country. Anyone earning up to four times the country's minimum wage qualifies for the program and completed houses are given to recipients or purchased at a heavily discounted price. However, demand far exceeds supply, meaning that not all eligible citizens are provided housing. The GMVV is funded in large part through PDVSA, the state oil company.¹¹⁵

↑ FINANCIAMIENTO A FAMILIAS CON TERRENO Y PROYECTO PARA CONSTRUIR

This program allocates subsidies for the construction of housing projects on land owned by the family. The families contract themselves professionals to plan the construction and project.

STRATEGY: INFRASTRUCTURE

The lack of city-wide infrastructure is an important factor of exclusion that divides the city.¹¹⁶ Investing in basic infrastructure such as water and sanitation, electricity, access roads, transport, footpaths and waste management is a pre-condition for the successful implementation of any type of strategy. Any effort in upgrading or construction of housing should be combined with infrastructure investments by the public sector in order to be affordable to the urban poor and to support the informal enterprises run by slum dwellers.¹¹⁷ Furthermore a neighborhood with roads in disrepair, that suffers from floods and where sewage and garbage is uncollected, is not attractive for private investment on the quality of the houses. While on the contrary it increases in neighborhoods well serviced by infrastructure networks, public facilities and with an efficient access to jobs through transport systems.¹¹⁸

Transportation and mobility are key factors that should keep up with the urbanization pace of a city in order to attempt to resolve the problem of spatial distribution. In Latin America, a first revolution in transportation started with the Bus Rapid Transit systems in the Brazilian city of Curitiba in 1970s. They are basically buses with separate lanes and accesses with a similar conception to above ground metros. The success and efficiency of this enhanced bus system has since been replicated in numerous cities. In Curitiba, along with the bus system and pedestrian roads, the mayor Jaime Lerner established an exchange system of recycled trash for bus passes. Thus also resolving waste issues with the recycle of 70% of the city waste.¹¹⁹

Understanding transportation and public facilities as vital components to improve slums, Urban-Think Tank have developed a Metro Cable system that combines both. In the following discussion we will examine the relation between infrastructure, housing and security of tenure.

PROJECT METRO CABLE SAN AGUSTIN

Caracas, Venezuela, Urban-Think Tank, 2003



fig. 68 - the informal barrio of San Agustín (red rectangle) located on a hill of Caracas was completely cut from the formal city

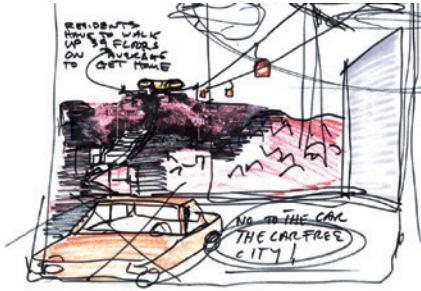


fig. 69 - in the same direction as Jaime Lerner in Curitiba, Urban-Think Tank promotes a car-free city

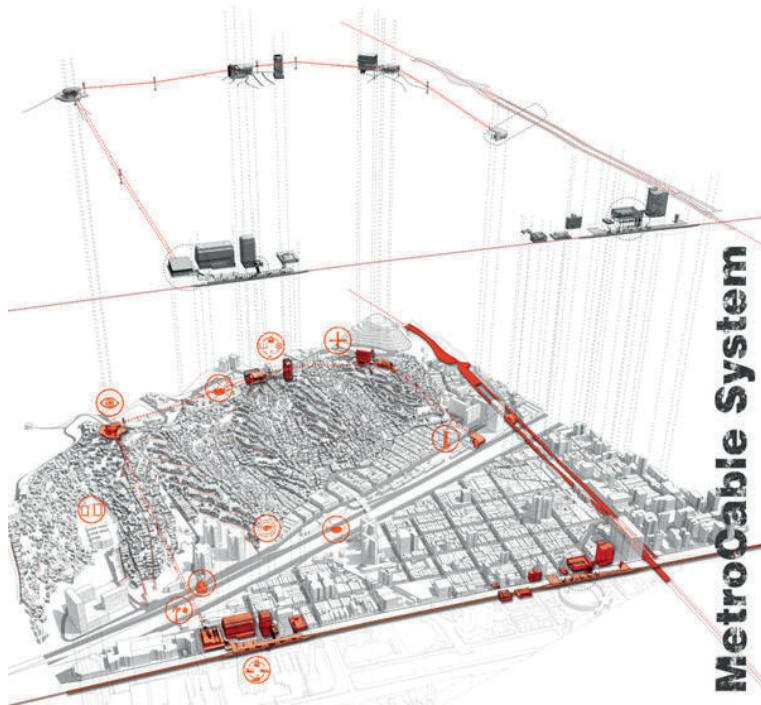


fig. 70 - the Metro Cable is not only an efficient transport system within the barrio that drastically reduced travel time, it also reconnects with the formal city public transport system

"THE POLICY MUST BE COUPLED WITH AN URBAN IDEA."

Alfredo Brillembourg

EXTRACT FROM A DISCUSSION WITH
ALFREDO BRILLEMBOURG OF URBAN-THINK TANK

ETH, Zürich / 04.12.2014

Urban-Think Tank is an interdisciplinary design practice dedicated to research and design. Directed by Alfredo Brillembourg and Hubert Klumpner, their work creates bridges between first world industry and third world informal areas. They also focus on the education and development of new generations of professionals who will transform the cities of the 21st century and now hold a chair at ETH Zürich.¹²⁰

DM

Slums are the result of various factors; one of them can be the failure of local policies. Latin American policies concentrate a lot on housing. How is it possible to have policies that make a better-connected city?

AB

Promises have been made by politicians to create and guarantee housing for the poor but they have not been able to comply with their word.

There are two points of view on this. The first one is that it is the responsibility of the government. Mike Davis in *Planet of Slums* argues that governments used to have housing responsibilities, used to create housing, have programs and used to push them at a government level. But then in the 90's and 2000's people said governments are really bad at creating housing and inefficient such as London with council housing etc.

So the governments pushed their responsibility to create new social housing to the market. But the market doesn't always do what is in the best interest of a state and cities. It responds to the market of costs and quick offers that sell rapidly. Market solutions are usually based on short-term gains. Who is overlooking the long-term gains? The city. And what happens when you create periphery "Minha casa,



fig. 71 - the end stations connect to the existing metro line and become extensions of it. The visibility and feeling of security the metro cable brings has had the effective impact of dropping criminality down by 30%.¹²¹

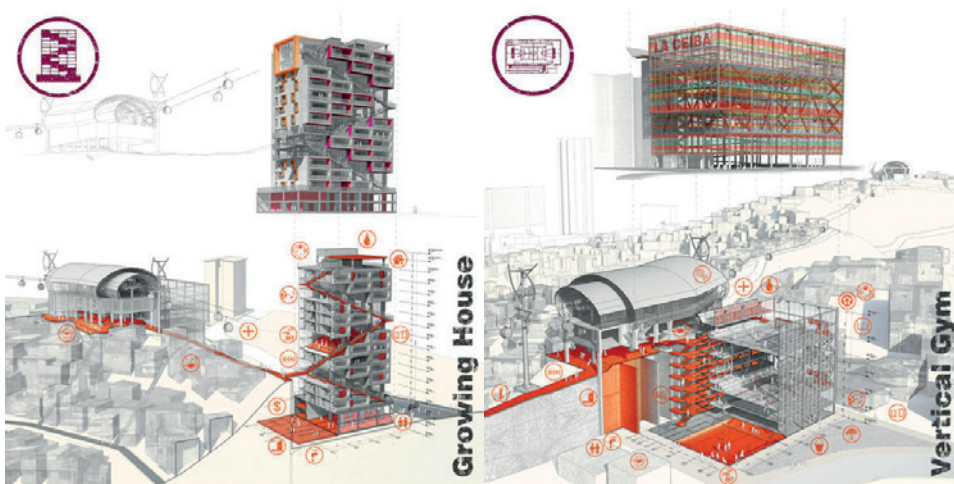


fig. 72 - the construction of a road in the barrio would have required the demolition of 30% of its housing. The metro cable system has a much more efficient footprint. As for the ones that have had to be demolished, they were offered other housing opportunities. The growing house project could also offer this moving possibility. The metro cable stations in the barrio are also opportunities to plug-in public infrastructure such as a vertical gym. By being directly connected to the transport system, they are easily reachable for the population and can also attract visitors from the “formal city”.

... Minha vida” in Brazil or the Chilean type policies? You are actually leaving it to the market to create the necessary housing. The state is playing a very dangerous role by not imposing enough rules to constructors for example to build inside the periphery of the city. The policy must be coupled with an urban idea. This is the exact problem: mayors and government officials did not take urban design in school. They think they know what is good for the city but they really do not. It has only been very recently that we understood that cities should not sprawl, that we should live in the footprint of the existing city, build the new city on top of the old one, but this has still not been really comprehended by politicians.

So constructors who want to make quick money and are often closely related to politicians have pushed for policies that go to the periphery of cities, to cheap land where housing solutions are developed in ghettos. In places where there is no work and you relocate all the poor people together. For example the Cidade de Deus, which was a 1960s policy. In China they still put people in thirty story high rises... We know from the 1960s that it does not work! Urban renewal projects of America like Pruitt-Igoe in St. Louis, that ended up knocked down, or all of the Harlem blocks that were all inspired by a Corbusian garden city have not worked.

So what we need is new enforcement for developers and the right incentives to create medium-rise high-density social housing near and in cities.

DM

AB

In these new incentives, how important is the housing question?

We cannot dissociate housing from a larger holistic view. Housing means infrastructure, public spaces, shops, places of work, churches, all of the things a community needs... and not only the units in which you dwell. That is the problem.

The housing policies are really focused on the unit but we believe housing should be focused on neighborhood building. Louis Kahn wrote a whole text on neighborhood creation as part of the US housing policies. We are now fortunately reconnecting with some of those advocacy-planning ideas of the 60s, because we have new tools, the internet, open source...

We are getting back to Henry Lefebvre's idea of a city. We need to create a policy driven organization and we are doing it here at ETH. We are creating ISTP which is going to be an institute for policy, so that the inventions of the architects here actually get to policy.

“GOOD CITIES BUILD UP OVER TIME”

DM

But you do also develop strategies for housing such as the “kit of parts”?

AB

The house and the kit of parts strategy are very important, as the units are important. But yes, as people like Alejandro Aravena and others have said, housing is not the real problem. Most people from the poor and lower middle classes know how to build a house and so all they really need is sites and services. India already worked on that for years and was very successful with architects like Doshi and others, who created prototypes of sites and services that prepare the terrain and enable people to build their own house. Or you give them the core unit and they expand over time. We are interested in all of that.

DM

What is the link between security of tenure and infrastructure?

AB

It makes no sense to give someone a land title with a very precarious house in the outskirts of the city with precarious materials and no infrastructure. So the first thing you have to do before even thinking of giving someone land tenure is to figure how you can get infrastructure in. And then how to better his house, but ultimately the idea of tenureship and infrastructure go hand in hand. So it's an economic, banking, policy issue, and it's then an architectural and engineering issue of how you build it.

DM

In the favelas where you improve the infrastructure, such as your metrocable projects, are there risks of gentrification?

AB

There is no gentrification really happening. Look at Istanbul which is the great example. In the 50s it had 1 million inhabitants and today 19. It grew by 50% each year. How did they provide housing? People came to the city and squatted. The government gave them squatted land and then legalized it slowly over time. That legalization led to people developing buildings where they once had a shack or little informal house. What you need is a kind of Tokyo model of tiny little house developments in vertical densities. What you need is to create lots of entrepreneurs building houses and little buildings and not one big construction company or government agency doing housing.

So we must put in policy all the possibilities that incentivize people to build housing. And the biggest factor is giving them tenureship. Of course the value of that land will depend on its accessibility to transport, sewage and all those things. So Metrocable is not gentrifying the hill because they still do not have tenureship. No one can buy and there is no possible gentrification or development process. There is informal development with neighbors, relatives and a few other precarious people coming to the city but there is no real up-scale gentrification. We know this very well also by the book of Janice Perlman where she went back to Rocinha 30 years later and saw that the same families had not moved up the social ladder.

DM

What is the city you would like to see in favelas?

AB

A measure of good city is what you can do for free. So if I can walk limitless under buildings like under the beautiful Niemeyer structures in Ibirapuera Park. The more you give up the ground floor of cities to the public and to public culture and where everyone feels that the floor of the city is for all, then you will have a better city. And I see it also happening in high dense vertical cities, I see cities connecting with public spaces on different levels and you can do a movie theater on the 22nd floor and have sky lobbies that are public and given by Schindler elevator companies or public infrastructure like elevators, cable cars, trains, trams, escalators, as public infrastructure into favelas. I see that changing the nature of how much the city will be owned by you and me the public realm.

I see the future of slums like the hill towns around the world, of Italy or Greece where over time they will be upgraded. We just need the right incentives for people to upgrade. So we should go back and figure out how these ancient hilltowns were upgraded, because they were medieval villages. But it takes time. Good cities are built up over time and this goes against the very nature of what cities are today. The city is seen as a place to make money. So we have to figure out how to get developers to be creative and build that new city we want but also give back.

We need more incentives to guide developers to build the city we want. Policies have to come coupled with a design instructive. What I want policies to become, rather than dry documents with lots of lawyers making them, I want them to become Ikea do-it / build-it yourself instructions. In conjunction, do the design work that builds the city we want and develop the policies in parallel that make the city that looks like the design we are trying to make. ■

POLICIES

BRAZIL¹²²

🏠 MINHA CASA MINHA VIDA

Literally “My house my life” is a program that aims at producing mass standardized housing units. They are sold to families throughout the country that earn less than 600 USD a month.

This program is federal and is not at all coordinated with the various municipal programs.

🏠 HABITAR BRASIL

The Living Brazil program incentivizes income generation to improve housing conditions in favelas. It promotes the construction of new housing, the implementation of urban infrastructure and basic sanitation and the recuperation of polluted areas.

📍 REGULARIZAÇÃO FUNDIÁRIA

The land property regularization program facilitates the recognition of a land to its inhabitant, giving them the security of possession and access. The land titles can be concertized in different ways from the right to the use of the land to its possession either by sale or by legitimation.

📍 URBANIZAÇÃO, REGULARIZAÇÃO E INTEGRAÇÃO DE ASSENTAMENTOS PRECÁRIOS

The “Urbanization, regularization and integration of precarious settlements” program aims at improving the living conditions in favelas by preventing and eradicating risk situations, responding to the basic necessities of the population and supporting land title regularization.

STRATEGY: URBAN PLANNING AND JOB GENERATION

Nearly two-thirds (1.8 billion) of the global working population are informally employed.¹²³ If the informal sector were a country, it would be the second largest economy of the world after the USA.¹²⁴

Lately in Brazilian cities, there has been investments through policies that try to bridge the socio-economical gap that divides the city. These programs that concentrate on housing and infrastructure provide vital services but fail to challenge the real issues in favelas such as unemployment, low wages and a growing unregulated market.¹²⁵

According to Data Favela, in Brazil the 12 million people living in favelas generate an annual income of 23.9 billion dollars, the equivalent of countries like Paraguay or Bolivia.¹²⁶ Researcher Guillermo Vuletin of the International Monetary Fund estimates the Brazilian informal economy to represent close to 30% of the country GDP.¹²⁷ Although untraceable, in favelas the proportion is higher.

While it is often in the informal market that the most innovative and responsive solutions are developed,¹²⁸ their disjunction with taxation might prevent states from investing in the areas that do not contribute to the formal market. Therefore instead of focusing on housing policies, governments should find incentives to bring the informal market into an active and contributing part of the city.

As Fabienne Hoelzel formulates in the following discussion, new easier user-friendly policies need to be conceived to encourage the transition from the informal to formal market. With the right policies, favelas could organize themselves as small, flexible production units with workshops promoting recycling, local production, urban agriculture, etc inside the city.¹²⁹ Through her work in São Paulo with the SEHAB (Municipal Housing Authority), Fabienne Hoelzel addresses economical and employment issues through urban design.

PROJECT SERRA DA CANTAREIRA São Paulo, Brazil, SEHAB, 2012

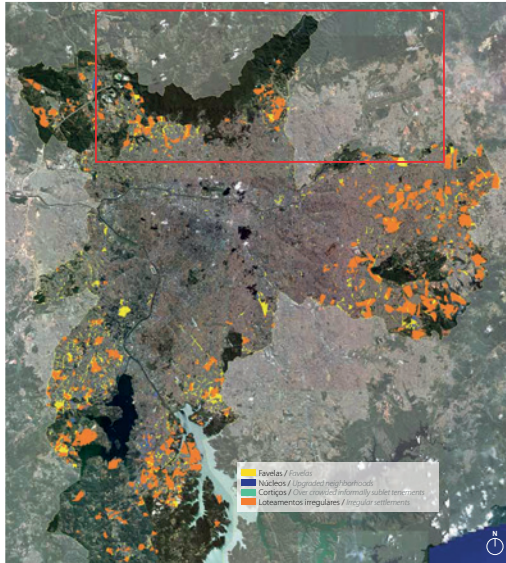


fig. 73 - the project concentrates on the Serra da Cantareira region (red rectangle), seeing the favelas on its hills as the entrance to an attractive forest for the whole city of São Paulo

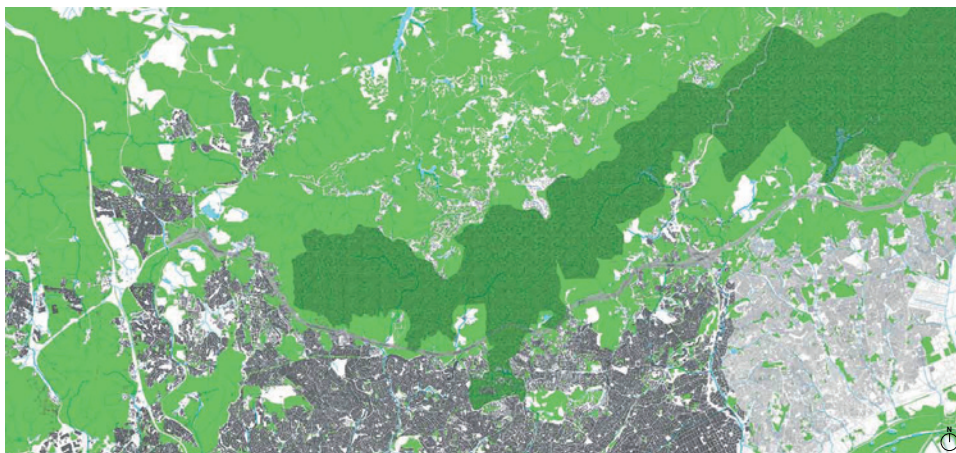


fig. 76 - the favelas colonized the hill up to the limit of the forest



fig. 74 - the project works on 3 scales: macro, meso, micro



fig. 75 - they conceived "Opportunity cards" that illustrate prototypes of different strategies for different locations of the masterplan

"JUST DO A GOOD URBAN DESIGN!"

Fabienne Hoelzel

EXTRACT FROM A DISCUSSION WITH
FABIENNE HOELZEL OF FABULOUS URBAN
Zürich / 21.11.2014

Fabienne Hoelzel is an architect / urban designer. After working for Herzog & de Meuron and Kees Christiaanse, she worked for three years in São Paulo at the social housing and urban development authority Sehab as the Urban Design and Planning Program Coordinator. Back in Switzerland, she has founded her own urban design and planning practice: FABULOUS URBAN. They focus on large-scale projects in so-called emerging and developing regions.

DM

Policies usually work more on the habitat scale than on the urban, how to link both?

FH

Just do a good urban design! If you don't do any urban design this disjunction happens. The problem also comes from the policies themselves. In Brazil the whole contracting system is very complicated. The city can't even contract an architect, it is the construction firm who does. Since these are public projects there are public bids which are won by the cheapest bidder therefore they talk to each other to agree on prices. The country is still very corrupt and the system doesn't help it, it's all about making money. The faster you build, the more money you make and the cheaper, the more profit you make. Thus it is not about urban design or making a better city. It is about winning the bid, building and making money. In order to break through this cycle, you need to change the policy. This is what my former boss in São Paulo tried to do. She had enough influence to incite the construction firms to commission certain architects that she knew would make a better job. So I dare to say that with the last administration we managed to do better projects. But it is still very hard because you have very little power.

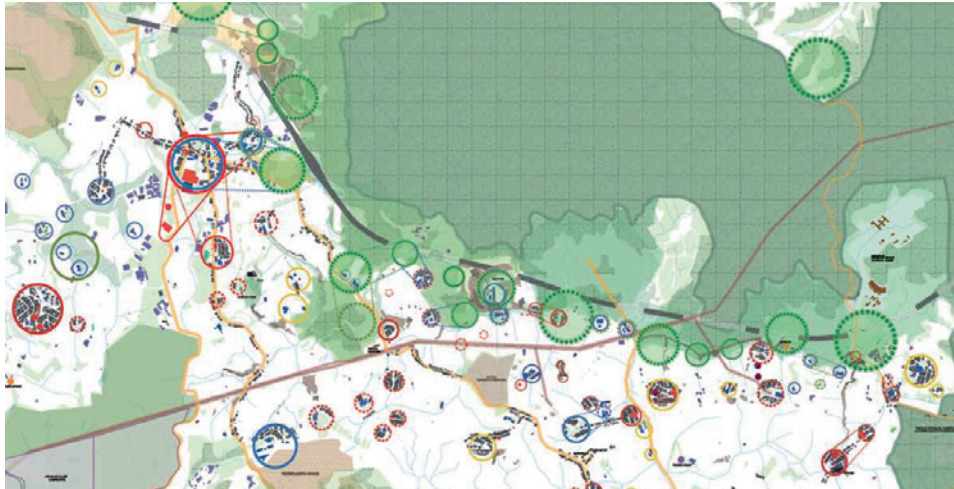


fig. 77 - part of the masterplan showing the network of opportunity spots

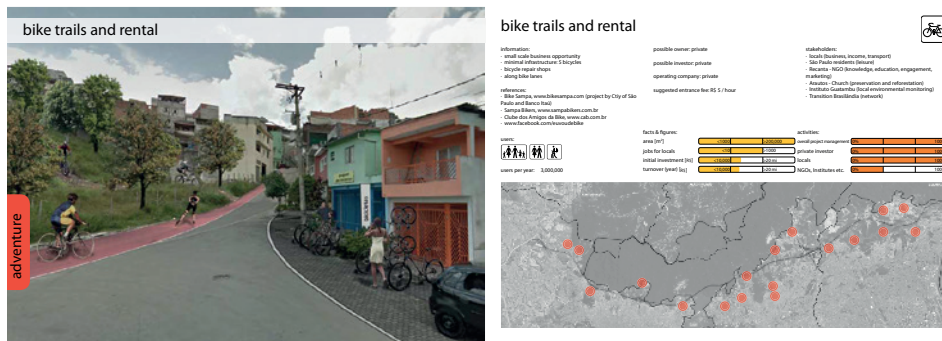


fig. 78 - opportunity card: bike trails and rental from the favela along the forest



fig. 79 - opportunity card: wood production on the edge of the forest

DM

FH

Your projects seem to be centered around the creation of jobs. How come?

People need an income. It is another debate but there is also the question of formal and informal jobs. Africa tends to get more and more informal and really struggles to formalize work. A lot of authors are arguing on the subject, such as Robert Neuwirth¹³⁰ who is a promoter of informal work and sees it as a foundation of society. I agree with him that it is one of the only ways to get people into it but I think we have to work on a policy level on strategies that facilitate formalizing informal work. My argument is that if you never have a formal company, you have no insurance, you do not pay taxes etc. But it is a discussion in itself and there are really two opinions on what is more successful. For example if you look at Italy, an important share of its GDP comes from informal work. People argue that if you cut it off by implementing strict policies forbidding it, their economy would crash. In any case, everyone agrees that an emphasis is to be given on job creation, but no one knows how. I don't really know either but I have an approach. As urban designers, we understand the urban space. It is our profession, we go and see how people use the space and do their businesses and we should respond to that. We should create spaces where people can do their businesses.

This is why social housing projects are so weird. You can't do your business anymore when you live on the 5th floor in a 50m² apartment. You can't sell or do your recycling business or bike repairs or whatever. This is what I mean by learning from the people, providing spaces where they can become active!

It brings me to the main idea of the shared facilities project we are developing in Makoko (Lagos). It provides a structure where people can come and do their businesses, like that you can initiate a positive cycle. Job creation is key.

DM

FH

So job opportunities can be influenced by architecture and urban design?

I believe so. But again, we have to be very careful as architects to not be romantic or naive. We also need to work with economists. And this brings me to the network and collaborative approach which I think is fundamental. We all have to work together. But it is really an issue of architecture and space. We should understand which sort of spaces, public-, private-, built-, open-, mobility spaces promote activities and then come from a policy level to implement it.

“WE NEED RESILIENT URBAN STRUCTURES.”

DM

But at the same time policies often tend to limit multi-functionality?

FH

In São Paulo there are these really outdated policies. They know it but it is hard to change it. For instance if you do social housing and you want to do public uses in the ground floor, these uses have to be accessible on their own and be separate from the housing, which is ridiculous. Not only is not going to be terrible on an architectural point of view but it is also very difficult to guarantee that there will ever be public use. Even if as an architect you say it is going to be public use, who is going to run these shops? It was some sort of problem we were struggling with in São Paulo. Sometimes we did these public uses on the ground floor but then it was empty, either because you couldn't guarantee this only public access or because you wouldn't find any one who would run this shop or whatever public space. Because there hadn't been enough research done, it was providing a space of maybe 5m² and no one can do anything in it. And again this has to do with urban design, if there is a shop and no one is passing in the street, it obviously doesn't work. Another example from Brazil are informal businesses that are not well seen and received. But the system is so lengthy and costs so much that people rather stay illegal-informal. Governments should probably understand better what sort of policies give the result they want. Sometimes they have good intentions but just don't understand or haven't even really thought about it. But when you draw the policies you see it is really stupid. And then if you want to change the laws it is really complicated and can take 10 years. We need architects that understand that policy, maybe it's boring and not so creative and means hundreds of meetings, but if you want to make a change, you have to understand on which levels and spots you can intervene. And if not you may build a beautiful building but you are not going to change a thing. Well maybe with one building you might change the lives of a few people but I'm more interested in changing the whole thing not only one spot in the favela, but changing the system, making these favelas a better place to live and that's why you need to interact on many levels and again for that we need architects that are also interested in urban planning, even though it is dry and politics.

DM

In a TED conference you gave, you said: “Governments have to learn they cannot create, they can develop smart urban policies but can't create” could you explain what you meant?

FH

It is a very personal question, that has to do with what is your understanding of the role of the state. Some philosophies promote a strong state that regulates a lot of things and others have more of a liberal thinking that the state should just enable things. I tend a little bit more to that enabling approach, the same way urban design should enable good architecture and not regulate it. It is what I meant that policies, schemes, urban design, things that deal with a larger scale should create conditions that enable things to flourish and not state “you have to do this like that, here public use, here a hairdresser etc”. Sometimes governments have good intentions but over-react and come up with policies that are not flexible enough. And again the same is valid for urban design. It should come up with a great open public space network like a skeleton, that doesn't tell you what happens where but that is strong, smart, and connects all the crucial parts, that holds the whole thing together without wondering what are the parts. We need very resilient urban structures. Sometimes they grow, sometimes they shrink. We tend to waste our energy defining whether this should be low or high density, public or private... The structure should be resilient. Sometimes you have more public spaces up to the 10th floor and sometimes houses of one floor, that can also have businesses. If you go again to Africa, the women work all the time and the kids are all around. It would be stupid to say this is work space and this is private because they do everything together. Maybe you have a good intention of offering a business space so they can do their more dirty work, but then you kill work because they cannot bring their kids anymore and cook at the same time for the grandmother etc. This is why we need resilient and very robust structures. I don't know exactly how they are but I am trying to address it in my work. That can be everything and evolve through time. And this you have to develop with the people. They tell you how it works for them. And this is a very valuable information for your work. If you think something that is ideal in your mind, maybe it is but it has nothing to do with the reality on the ground. And that is a plaidoyer for actor network processes and participative processes. Also here in Switzerland, go and talk to the people! They have lived there, sometimes for 40 years, they know how their village works, you don't. Maybe you are a fantastic architect, but you don't know how it works so do it with the people. I think then your work can become successful. ■

POLICIES

It seemed irrelevant to examine in detail the policy of a specific country in regards with security of tenure. However, it seemed noteworthy to mention that all of the previously analyzed policies that address the housing scale also address the tenure issue in different manners.

For instance in Uruguay, the informal settlements that are on public land can apply for a regularization process while the ones that are on private land can apply for new construction housing, relocated on another site, where they become co-owner of the house and land through a cooperative.

There are also these two possibilities in Brazil, while in Mexico terrain tenure is one of the modules of the “Vivienda Digna kit”.

In Chile however tenure regularization is not common and not directly applied in the mentioned policies. The beneficiaries of social housing projects are in most cases sharing a co-owned condominium.

STRATEGY: SECURITY OF TENURE

Already in the 1960s, security of tenure was identified as critical by John Turner¹³¹ to encourage housing improvement. It is not only giving families a protection against possible eviction, which can incentivize them to invest in the neighborhood and in businesses, a land title can also serve as a guarantee in certain markets such as loans.¹³² As Hernando de Soto has shown in his research¹³³, slum dwellers have an “invisible capital” and part of their poverty comes from the immobility of it. Land titling can bring that capital to life.¹³⁴ UN-HABITAT also argues that local authorities and private service providers are less likely to deliver of basic services and infrastructure in informal settlement with unclear land tenure.¹³⁵

There are however diverging view on this land titling process as John Abbott for whom it “reflects a specific world-view of land that derives from the western capitalist model of individual ownership”.¹³⁶ Mike Davis also sees it as a conservative, neoliberal way of generating more tax income while improving the current government popularity.¹³⁷

It is thus unclear whether improving formal conditions of tenure improves the living conditions of slum dwellers. What is clear is that it can represent certain rights, such as the rights to occupy, use, enjoy, dispose, buy, inherit, cultivate, produce, sublet, rent, sell.¹³⁸

The following discussion intends to have a better understanding of the importance set by UN-HABITAT on security of tenure and how they apply it by working with different actors. UN-HABITAT’s global approach will also be discussed, as it is a key actor in advising and sharing strategies and policies to countries with informal settlements.

“GOVERNMENTS SHOULD HAVE A NATIONAL APPROACH POLICY TO URBANIZATION.”

George Deikun

EXTRACT OF A DISCUSSION WITH GEORGE DEIKUN OF UN-HABITAT

UN-HABITAT liaison office, Geneva / 20.11.2014

UN-HABITAT is the United Nations program working towards a better urban future. Its mission is to promote socially and environmentally sustainable human settlements development and the achievement of adequate shelter for all.¹³⁹

DM

What are the scales in which UN-HABITAT works and how does it coordinate with the different actors?

GD

It depends on what the country is interested in. Some countries work at the national policy level. In some cases, we have done international initiatives like the one we have just finished that develops guidelines for basic service development, which is a huge element of improving slums. It was asked by the G77 countries to help them develop some standard guidelines. Many countries do not have the capacity to do all this work themselves and they would like to benefit from all the practices around the world. One of the functions of a UN organization like us is to bring those best practices together and make them available and usable to governments who want to move in those areas. We also have country specific innovative projects. On one hand we work at the normative level, on the other that process is informed by what we do in countries on specific projects. Then this is all rolled up into positions that we try to promote with governments at the international level through different conferences. We have regional conferences in ministries of housing and urbanization in all of the geographic regions, which are opportunities to influence the sustainable development goal processes that follow on from the

Millennium Development Goals.

The ideal is that governments have policies that integrate the different levels. The responsibility of a national government is different from a state government, from a local government or a community based organization and NGOs. It is a lot more effective if there is a coherent framework to which everyone is contributing to on urbanization issues. The other issue we are trying to address is the fact that national budgets have really been area based and do not focus on a city's needs as a city, it's done through sectors. We are trying to advocate that governments that are challenged with urbanization, which is almost all of them, should have a national approach policy to urbanization. A big part of that is how you integrate the different levels of governance and actors.

DM

How can policies be implemented in a decentralized and context responsive way?

GD

A lot of things are very context specific, but there is value in just establishing priorities. For instance in the whole issue of slum upgrading there are still governments who do not believe that slums should be upgraded and think they should be demolished. So the global approach environment varies with the country politic and then how that is carried out is context specific in terms of needs. For example in India where I worked, the government has 15 different categories of slums and depending on the category there are different levels of federal or/and state government financial support for slum upgrading. Versus some countries in Africa that still just want to demolish slums and don't really care about what happens to the people. Generally when you demolish a slum it just moves to another area, because they are a very flexible population, that's how they survive. So it is case by case, it depends on what the country is looking to do. In the end the actual physical and social investment that is made is context specific. Whether it is roads, water and sanitation infrastructure, housing development, economic interventions for job generation. The emphasis depends on the context and what the communities and governments want.

DM

The fifth point in the UN-HABITAT definition of a slum household is on security of tenure. How crucial is the regularization of tenure?

GD

Land tenure is a critical point. It is probably the number one issue

... after very basic services. It influences how to get to affordable and livable housing and influences economic activity. From the experience around the world for the last 50 years, when you look at communities and programs, the biggest impact happened where people have had security of tenure. It doesn't mean a land title that is registered in a town office, it can be an informal provisional title or a title that is established through customary law, in areas where communal ownership of land is common. It could be under Islamic law, which is different to western laws to some extent. The fact that people have the security of tenure, that they are not going to be moved abruptly, or without due warning and compensation, spurs on the investment of individuals in their housing, in their home-based economic activities and upgrading their services. It also provides a basis over time for people to be asked to pay user fees, property taxation and all these other revenue generating resources that are important for local governments to be able to provide services. So it's a very critical element in our programs and it is one of the areas in which UN-HABITAT is known for. Our facility called the Global Land Tool Network has been developing approaches over the last 20 years to improve land tenure and insecurity of land tenure for low-income groups, particularly in slums and in some populations with women. In many countries women are not allowed legally to own property, but yet there are huge numbers of single-family female-headed households. It is a big issue in many of the countries that are under Islamic law. So we try to develop innovative approaches for different contexts through this Global Land Tool Network.

DM

What are the strategies to ensure that the population in need will stay in a project built for them and not sell and relocate?

GD

There are lots of techniques for that it depends on the context. Basically what you want to do is develop incentives for people not to sell and to stay and not be subject to land speculators. It is a very hard question to address because basically it all goes down to not permitting people to get full access to rights before a certain period of time, that is defined by the community and the participative program and/or local government. So a person has to occupy the land for say 5 or 10 years before they can turn around and sell it. That is what it resumes to; how you put in those incentives and disincentives to make sure that the community will remain stable. Every country, every program, every project has a different twist to this depending on the culture and the community.

“GUIDE GROWTH AND DO SLUM UPGRADING”

DM

How does UN-HABITAT position itself in the evolution and shift of strategies that went from new housing to sites and services to slum-upgrading to city development?

GD

Frankly speaking the names have changed a lot, but the processes do not seem to have changed all that much. You are using the term Sites and Services which we do not use anymore because it is considered an old term, we now call it Planned City Extension, but when you look at the projects, they are Sites and Services projects. The community's needs in terms of services and opportunities are the same. They need housing, jobs and basic services, infrastructure, health and education. The slums are still there, so is unmanaged growth and how you manage growth for low-income people is still a Sites and Services approach. The emphases change, there have been different periods. In the 60s and 70s it was basic Sites and Services. Just provide it to them and then it will work out. But then we found out people did not have the economic situation to be able to improve the housing and services. So in the 80s and 90s, financing became the issue, giving people access to a loan or credits. And so it was the whole era of housing finance. Now a big issue is job generation because of all the unemployed youth. The age profile of many of these countries and communities show the preponderance of youth and people under 21 who, in many cases, are the majority. So how can you absorb that population into the economy in a way that people can provide for themselves. This is becoming a bigger challenge, which is directly linked to how a community evolves. So I think the emphasis has changed in terms of interventions, but the issues are the same. Governance is also a big problem that people have now recognized. Political voice and access to decision making processes are getting increasingly more attention as a result of the many revolutions we see throughout the world. They are basically an issue of people not having jobs and not having an influence on the political processes and how resources are used by governments. I think those two areas are going to get much more attention but in the end, it's all the same issue. It's all the same people, the same development patterns, the same urbanization issues. ■

OUTLOOKS

OUTLOOKS

THE ARCHITECT'S ROLE

WHAT'S NEXT?

The following pages consist of global and specific outlooks to both end this research and reopen the discussion. They also aim at condensing all of the studies to produce a toolbox for upcoming projects.

These outlooks start by compiling and recapitulating the key points that came out of the strategy analyzes with their link to projects and policies. Going back to the slum studies in Rio de Janeiro and Santiago, essential problems, which can be derived into projects, are extracted from the results. These two distinct slum typologies are also interpreted and put into relation with their socio-political context. This leads again to questioning what strategy should be applied in what situation.

This whole study also brought some questions on the role of the architect in such a context, which are addressed in the following outlooks.

Finally the possibilities for further research are developed as well as the orientation that this research has given to the upcoming project.

OUTLOOKS

STRATEGIES

KIT OF PARTS

The kit of parts strategy can be very effective in inciting housing improvements that can be added gradually over time. The choice of the elements is important and priorities could be given in their implementation. Low-tech, low budget, do it yourself sustainable parts could be developed. The parts currently implemented in policies are of very basic construction nature. Additional modules could be envisioned such as rainwater collecting systems, dry toilets (as in Mexico), water heating systems or even food production units. The construction of these new modules could be explained through guides and manuals, in the same way as the Uruguayan auto construction guides. A relevant point is that land title can be part of this kit, bringing security of tenure in the housing upgrade process. It is however needless to say that this strategy alone, without infrastructure and all of the other dimensions discussed in this study, will not improve the neighborhood quality.



fig. 80 - dry toilets retrofitted in latrin pit

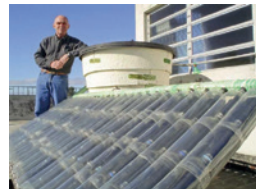


fig. 81 - a DIY solar water heater from plastic bottles

INCREMENTALITY

The transposition of the sites and services concept to the housing scale produced core houses and incremental housing. Jeremy Seabrook feared that sites and services would incite the withdrawal of state and government support.¹⁴⁰ However in the analyzed project, the state still produces a frame with structure and infrastructure in which auto construction is possible. The construction of this frame could even be

minimized, such as the E-House project of Elemental. The extensions need to be well planned and anticipated so that they do not block light and ventilation and as preconized by Elemental, produce a “harmonious growth over time”.¹⁴¹

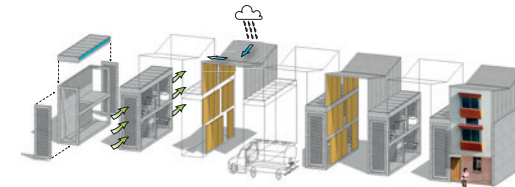


fig. 82 - Elemental's E-House project

NEW CONSTRUCTION & AUTO CONSTRUCTION

The important need of housing for the poor has been addressed in Latin America by a variety of housing policies. These projects aspire to bring adequate and better housing conditions. In most cases, the budget tends to limit quality standards. From the various discussions and analyzed projects in this research, the main critiques of these projects are for not taking into account the neighborhood nor the city scale. Their urban form is often self-centered and the exterior and community spaces are treated very superficially. Location is crucial and is often not enough taken into account. Moreover these projects should not only be well located, they should also be well connected and integrated in an urban masterplan. One of the main concerns should be learning from the past project to not reproduce failed social housing projects that became ghettos with concentrations of poverty, unemployment and violence.



fig. 83 - Cidade de Deus, Rio, 1966



fig. 84 - a Minha Casa Minha Vida project, Eunápolis, 2011

INFRASTRUCTURE

Infrastructure is a crucial point that is often more complicated to deal with than housing, particularly in on-site upgrading projects. As seen in the Morro dos Prazeres slum study, roads and transportation are necessary for the development of a settlement as well as improving its living conditions. The problem is retrofitting them often implies the demolition of housing (up to 30% for roads instead of the Metro Cable in San Agustín). This is why new forms of public transportation should be developed. The infrastructure services linked with water are also crucial. Rainwater evacuation must be treated in informal settlement to avoid floods and landslides, particularly in the ones located on hills. Drinkable water and the evacuation of black water are also major issues as seen in the campamento San Francisco.

Land tenure and the house value increases are not to be neglected. In many pacified favelas in Rio, prices have gone up and put pressure on the previous slum-dwellers, particularly the ones renting their homes.¹⁴² The new generations also often have no other option than moving out to favelas in periphery when they want to move out of the family house. According to the Brazilian Association of Real Estate Company Directors, prices increase even more following the pacification of the favela when it has good accessibility, such as the Complexo do Alemão with its cable car.¹⁴³ Answering land title issues has to go hand in hand with infrastructure strategies.



fig. 85 - urban stairs coupled with a rain water drain

URBAN PLANNING & JOB GENERATION

Inciting job generation is not yet well integrated into policies. As mentioned in the discussions this strategy has not yet been much developed. Maybe a next step in housing and urban policies would be

to find ways to integrate job generation into them. As the World Bank and the International Monetary Fund articulate in their latest report,¹⁴⁴ economic growth alone will not end poverty but job generation is crucial to go in that direction.

Furthermore there should be more incentives to formalize informal jobs. This is often an issue in countries with too high bureaucratic levels, which is typical in many developing and emerging countries. As discussed with Fabienne Hoelzel, people in the informal sector pay no taxes, which reduces the revenues of the state which in return will have less funds to implement effective policies.



fig. 86 - organic food delivered from a favela

SECURITY OF TENURE

Through the researches and articles against and in favor of facilitating access to land titles and security of tenure it is difficult to draw precise conclusions on its impact. Moreover it is closely linked to political and economical trends and ideologies, which makes it hard to differentiate between the theorist's point of view and actual case studies with precise impact evaluation. What I do keep of it, is that it is crucial and does not need to be an effective property title. It could also be long term agreements with the state or land owners or other transitional solutions. It could be worthy to study alternatives solutions to land titles by looking at informal agreements between squatters and landowners in Europe.¹⁴⁵ What is also to be noted is that it will most likely incentivize people to invest in their houses, infrastructure and neighborhood. It is also easier for private sector to build infrastructure when the land tenure is clear. However alone it will in most cases not have effective results. It could be coupled with auto construction policies, infrastructure and be integrated in the urban planning of the region.

SLUM STUDIES IN BRAZIL AND CHILE

Both of these studies have brought me an important amount of material for a better understanding of informal settlements in Latin America by analyzing two specific locations. In general when thinking about problems in slums, the first things that come to mind are the living conditions at the house scale. However as the interviews and analyzes in both informal settlements showed, housing is not their biggest problem.

The studies also highlighted the recurring problems with basic infrastructure such as water, electricity and waste. The studies also emphasized the importance of transportation, accessibility and flexibility of the house. They also pointed out a certain lack of public services within the informal settlement and in the surrounding neighborhood.

An essential point that comes out of the comparison of these two informal settlements through discussions with inhabitants is their desire to move out to a social housing project or to stay. It is also notably reflected in the construction type. Vice versa the construction type most certainly influences the desire to stay. In Morro dos Prazeres the majority of the inhabitants want to stay whereas in the campamento San Francisco a majority is willing to leave. It is also reflected and influenced by the state politics.

In Brazil the government has favel-upgrading policies while in Chile the government would want to eradicate campamentos and would wish to grant homes to the slum dwellers. In Brazil not only do the political positions incite the inhabitants to invest in construction, their formation is also older so they had time to solidify.

The recently published study “Um País Chamado Favela”¹⁴⁶ (A Country Called Favela) interviewed 2000 inhabitants in 63 favelas of 35 cities in Brazil. It revealed that 95% of the inhabitants feel happy, 81% like to live in a favela and 66% do not want to move out of the favela (up to 78% in Rio de Janeiro). Moreover the study shows that among the favela dwellers, the middle class has doubled in the past 10 years.¹⁴⁷

Which brings back to some of the questions that have been addressed throughout this research: What strategies for informal settlements should be enforced in the policies of a country? Should it be on-site upgrading or social housing construction? Can and should the state finance housing for all of the slum dwellers? Is it really addressing the problems?

HOUSING POLICIES

This study has outlined the complexity and specificity of slums. There is therefore not one answer. However one certainty is that housing policies alone will not solve the inequalities of a country. Moreover history has shown that numerous well-intended social housing projects have failed and have gone back to being informal. This is why policies should be conceived in a holistic way and not only focus on the superficial visible housing problem. In countries such as Brazil the magnitude of favelas is so big that providing new housing for all would anyway seem unfeasible. And even if it were, can social housing projects work on the long term?

URBAN PLANNING

For social housing projects to work all of the scales should be considered in the policies from micro to meso to macro to global. Projects should be conceived from the house to the city and vice versa, the same way governance should be multi-layered. The coordination between the different governance scales is key to implement future well-designed policies.

ON SUCCESSFUL PROJECTS

Architects like Urban-Think Tank and Elemental get criticized or are seen as opportunist for the recognition they get by working with the poor.¹⁴⁸ Of course their projects have defects and are not as perfect as they present them. It is the case of every architecture project. Critic is not the problem, as it tends to make better architecture over time. The problem is when the substance of the critique is not based on the project but on the act of intervening in a context of poverty and getting credit for it. The ones criticizing are usually people who do not propose any solution or alternatives. Of course architecture will not save the world. But then what is the role of the architect in our society?

“YOU SHOULD NOT WAIT FOR PROJECTS. TO MAKE A DIFFERENCE ARCHITECTS SHOULD BECOME PROACTIVE.”

Fabienne Hoelzel



fig. 87 - participative housing projects in a Chilean campamento: a discussion with the community through plans, models and renderings of a project I worked on

THE ROLE OF THE ARCHITECT

While growing up, I had the chance to follow my father give journalism workshops in local community radios in Benin and Honduras. He ended up founding an association promoting local community radios in the favelas of Brazil. It was evident for me that whatever job I would choose, part of it would be dedicated to working in developing countries. It also motivated my orientation choice into architecture. What other profession deals on such spatial and palpable levels on both technical and humanist aspects of everyday life? What other profession influences all of the movements and sensations One has in a day?

I was stunned to see the lack of interest in architecture for the poor in many students, Professors and professionals. Why is it so? Because it is a complex problem that no one really wants to get into.

Common excuses or reasons for not taking position come from a fear of neocolonialism. This issue is linked to the attitude and strategy-approach rather than the fact of intervening in another continent. Of course if you come as the “Western architect” who knows everything and says what to do, then you will be repeating history and architectural failures. But when you work with participative processes, local NGOs and local communities, it is just not a question anymore. From my experience in working in campamentos in Chile, when the people living there saw me coming they were both enthusiastic to exchange with a foreigner and touched. They would tell me they were moved by the fact that somebody from so far was actually concerned with their problems.

Another recurring question is the one of the legitimacy of the architect. Architecture, construction and urbanism are complex fields that require experienced professional knowledge. Since so few architects are interested in working in the humanitarian field, NGOs such as Doctors

“ARCHITECTS SHOULD BE INSTRUCTED TO WORK BOTH IN THE RICH AND POOR PARTS OF CITIES.”

Alfredo Brillembourg



fig. 88 - architecture students (with whom I worked) repairing roofs with the NGO TECHO in campamentos during floods in Santiago, Chile

Without Borders or the Red Cross have had to do much of construction work themselves, beyond their domain.¹⁴⁹ It seems that the work of the architect becomes legitimate when there is a mandate. Without taking many risks we can also extend the legitimacy to when our work has an impact. When organizations like UN-HABITAT predict that if we do not change anything by 2030 there will be 2 billion people living in slums,¹⁵⁰ it seems that there is an opportunity to have a great impact. Who will step up and provide dignified housing for the poorest communities? Who has the expertise?

At the same time being opportunist is also sometimes criticized. Nevertheless when looking at the researches of Rem Koolhaas in Laos¹⁵¹ or of Herzog & de Meuron on Switzerland's urbanization,¹⁵² we can also say they were opportunist. Yet they produced discussion and have had political impact. Any project or research that induces discussion, positive change and/or has an impact cannot be criticized for being opportunist.

What can and should be criticized is being cynical, naive or romantic. Presenting inadequate living conditions out of their context as a solution not only brings back the “illusion of self-help”¹⁵³ but is also a lack of understanding of the situation and disrespect towards the people living in these conditions.

Hopefully architecture for the urban poor will become more and more part of architectural education, which will not only be focused on forming the next star-architects. The modernist movement took architecture from typical Beaux-Arts programs of palaces and operas to housing for masses. In the same way, now is the time to extend architecture to the whole city.

Finally architects in general should be more proactive. I am however quite optimistic on this point seeing that a growing number of young architects are becoming activists. They identify what should be done, anticipating government commissions and using tools such as online crowd-sourcing platforms¹⁵⁴ and can try to make these projects reality... A step towards reconquering the city.

WHAT'S NEXT

FURTHER RESEARCH

Impact evaluation and prediction methodologies are themes that could be developed. It is however a complex process that depends upon many variables. Obviously a project that had a certain impact in a certain location within a certain community will most probably not have the same impact in another location. Moreover impact evaluation is a continuous process that should be done at intervals that can vary from 5 to 10 to 20 years. The results of the impact of a project can also fluctuate depending on external and uncontrollable factors. Ideally the impact evaluation methodology could be used to predict impact results of future projects. To do so, rigorous case studies should be done in order to find the parameters that affect the success of a project. This research and methodology could be useful for any type of architectural and urban project.

Another possibly prolific research direction could be in European housing and urban policies. Following World War II, there was an enormous need for mass housing. The different countries had and still have different approaches to providing the necessary housing. A historical analysis of their different policies could show the factors that have evolved and be informative of impact evaluation.

Finally with a rigorous and methodical analysis of the policies in various countries as well as analyzes of the projects they produce and an evaluation of their impact, it could be possible to understand what kind of city they produce and how to improve them.

PROJECT

The main tool developed through this research is a “slum analysis” methodology that underlines problems, qualities and opportunities in a particular informal settlement and in its urban context.

The second point was to classify various strategies, understand their relevance to the context and scales by discussions with professionals working with these strategies. By analyzing in parallel the scales of various policies of a country and putting them side by side to projects that use the different strategies, it is possible to see if the strategy-vision is taken into consideration in the public policies or not.

The project following this research will use the “slum analysis” to identify what strategies could be used to improve a particular situation. These strategies will then be projected and drawn as prototypes. They will be implemented in the analyzed site(s) as a scenario or various scenarios that project their future development over time.

Using existing, modified or new policies as a frame, the strategies should be able to be replicated in similar conditions throughout the city. The development of prototypes in some specific sites will then be retro actively integrated into new urban and housing policies for the country. The whole process that starts from questioning the informal settlement location could then benefit the connectivity-porosity of the whole city by being developed alongside urban strategies.

The developed project will try to reconnect the different scales, from the informal settlement house to urban scenarios.



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IMAGE CREDITS

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I. INTRODUCTION

fig. 1: based on data in UN, World Urbanization Prospects, 2007

fig. 2: Base map: http://commons.wikimedia.org/wiki/File:Urban_population_living_in_slums.svg (consulted on November 13th 2014), modified based on data in UN, World Urbanization Prospects, 2014

fig. 3: based on data in UN-Habitat, Global Urban Indicators Database, 2012

fig. 4: *ibid.*

fig. 5: Base map: http://commons.wikimedia.org/wiki/File:Urban_population_living_in_slums.svg (consulted on November 13th 2014), based on UN-Habitat, 2005, modified colors

fig. 6: based on UN-Habitat, 2003, p.17, modifications in red: Added: "Lack of urban planning & public policies" and "Urbanization", Deleted: "Lack of economic growth"

fig. 7: Damien Magat

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Google Street View (photos from July 2014): fig.: 16, 17, 19, 20

TECHO: fig. 26

Yves Magat: pp. 77-79, 88-89, 98-99, fig.: 35-48,

Layer Details:

fig. 9: source: Observatorio de Ciudades UC, "LULU and Price of Land", http://www.ocuc.cl/wp-content/downloads/planos_1990-2002/26_precio_de_suelo_LULU.pdf (consulted on November 14th 2014) modified colors

fig. 10: Base: Density and Social housing: Observatorio de Ciudades UC, "Density Building Permits and Housing Basic", http://www.ocuc.cl/wp-content/downloads/planos_1990-2002/11_vivsocial+densedif.pdf (consulted on November 14th 2014), Universities and Cultural Infrastructure: Observatorio de Ciudades UC, "Price of Land, Housing, Basic and Cultural Facilities.", http://www.ocuc.cl/wp-content/downloads/planos_1990-2002/08_precio_suelo.pdf (consulted on November 14th 2014), Campamentos: TECHO, Centro de Investigación, "Monitor de Campamentos", <http://chile.techo.org/cis/monitor/> (consulted on November 14th 2014)

fig. 11: Base: Google Maps (consulted on January 4th 2015) modified, Infrastructure and Campamentos: TECHO, Centro de Investigación, "Monitor de Campamentos", <http://chile.techo.org/cis/monitor/> (consulted on January 4th 2015), Social Housing: TECHO, Centro de Investigación, "Monitor de Viviendas Sociales", <http://chile.techo.org/cis/viviendas-sociales/> (consulted on January 4th 2015)

fig. 12: based on Google Maps (consulted on November 20th 2014), discussions with inhabitants and on-site photos

fig.: 28-30: based on on-site surveys and photos

fig. 31: based on Exame "Quanto vale seu imóvel novo ou usado?", <http://exame.abril.com.br/revista-exame/edicoes/1017/noticias/quanto-vale-seu-imovel-novo-ou-usado> (consulted on January 5th 2015), modified colors

fig. 32: Base: Prefeitura da Cidade do Rio de Janeiro, "Densidade demográfica, por Barrios - 2000", modified colors, Favelas and Topography: Rio Prefeitura, "Mapa Digital de Rio de Janeiro", Satellite photos 2012, http://portalgeo.rio.rj.gov.br/mapa_digital_rio/ (consulted on January 3rd 2015), Roads: <http://www.openstreetmap.org/> (consulted on January 3rd 2015), Favelas with UPP: O Globo, "Mapa das favelas e das UPPs do Rio de Janeiro", <http://oglobo.globo.com/infograficos/upps-favelas-rio/> (consulted on January 3rd 2015)

fig. 33: Base, Favelas and Infrastructure: Rio Prefeitura, "Mapa Digital de Rio de Janeiro", Satellite photos 2012, http://portalgeo.rio.rj.gov.br/mapa_digital_rio/ (consulted on January 3rd 2015), Favelas with UPP: O Globo, "Mapa das favelas e das UPPs do Rio de Janeiro", <http://oglobo.globo.com/infograficos/upps-favelas-rio/> (consulted on January 3rd 2015)

fig. 34: based on Google Maps (consulted on January 3rd 2015), discussions with inhabitants and on-site photos

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III. STRATEGIES

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fig. 53: <http://elpulsoedomex.com.mx/beneficiadas-comunidades-de-tianguistenco-con-programa-de-sedesol-techo-seguro/> (consulted on January 3rd 2015), modified colors

fig. 54: <http://www.col.ops-oms.org/saludambiente/guia-letrinas.htm> (consulted on January 3rd 2015), modified colors

fig. 55: <http://www.asisucede.com.mx/wp-content/uploads/2013/10/022.jpg> (consulted on January 3rd 2015), modified colors

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