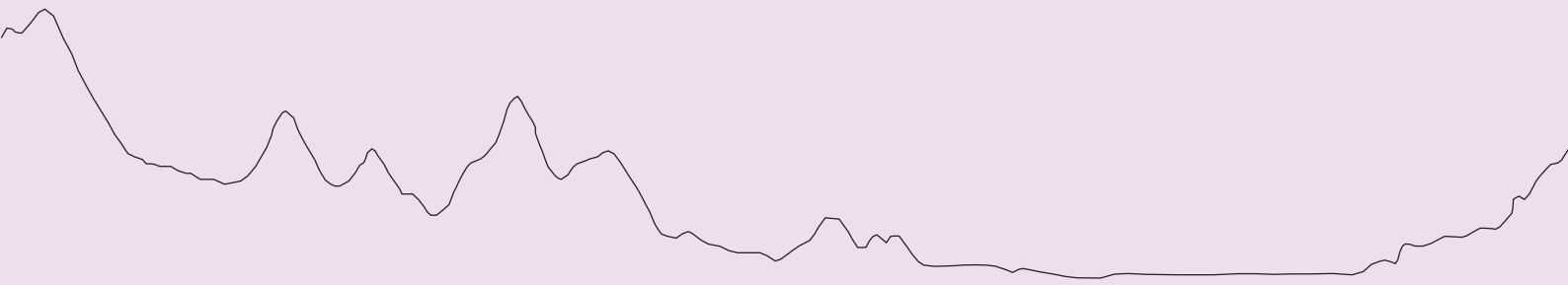
Looking for alternatives in the city of the slopes

Housing as a process to reduce socio-spatial segregation in Lima, Peru

Pablo Muñoz Unceta



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Graduation Project

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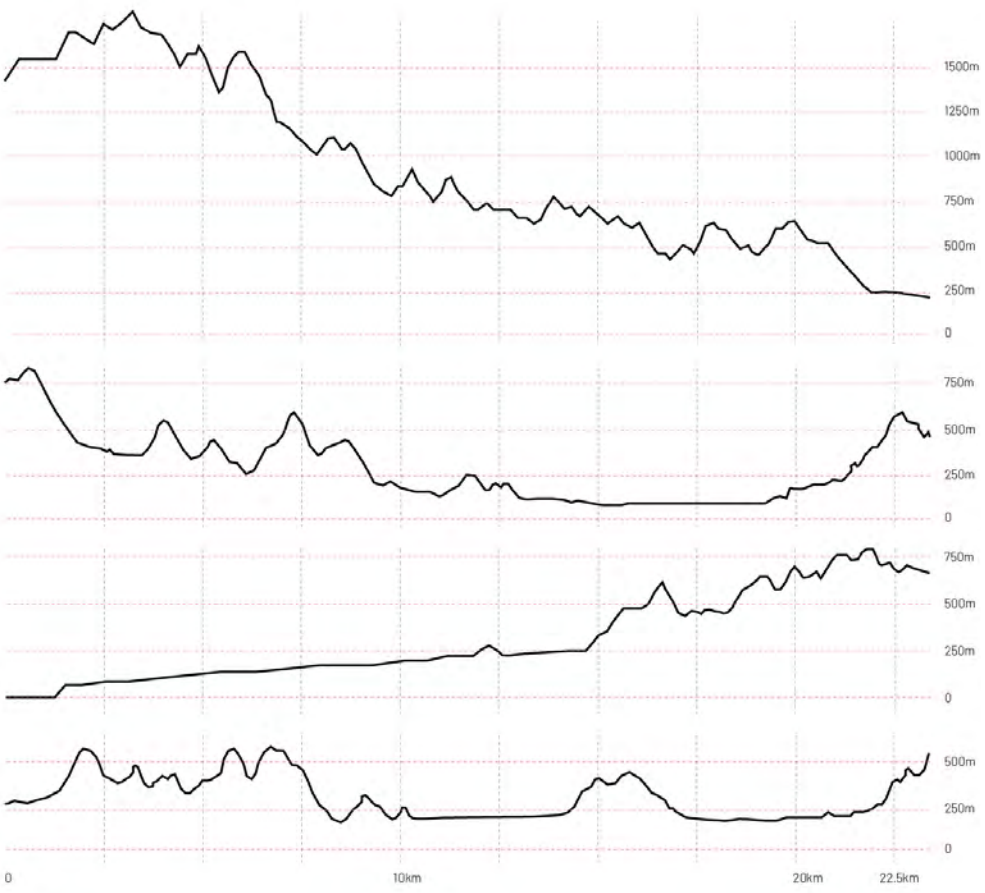

Looking for alternatives in the city of the slopes

Housing as a process to reduce socio-spatial segregation in Lima, Peru

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To Zubi, who has taught me the value of the present

Acknowledgements

First of all, I would like to thank my family. It is for and thanks to you that I am here after so many trips and different homes. Thanks to my mother, Georgina, to my father, Miguel, my sister, Nerea and my aunt, María. It is through you that I have always learnt the most.

This graduation project would not have been possible without the support and motivation my mentors have given to me during the last months. I believe we have been a good team and I have enjoyed working with you. Thanks, Birgit Hausleitner, for those conversations that always brought an unexpected and exciting dimension to the project, even if it was a bit painful to realise the efforts it demanded. It is amazing how much you can see in your students' work. Thanks, Marcin Dabrowski, for reminding me of the human and political dimension of the research and for encouraging me with the writing. Thanks, Joaquín Sabaté, for the great and detailed feedback that you sent to me in every conversation. It was very useful to have an external view that could see what was not so obvious in the short distance.

I want to thank also my teachers and colleagues at TU Delft for the opportunities that I was given during my two years here and for all the great things that I was able to learn from and with you. I would especially like to express my gratitude to Luiz Carvalho for all his help and support during this time and Ana María Fernández Maldonado, whose knowledge on Lima and familiar discussions brought a little bit of Peru to the Netherlands in every conversation.

This graduation project would not exist without my second family, all of you whom I have shared my life in Lima with and that have shaped me in the way I am now. You were in my mind in every piece of text and every map that I did for this research. I hope my contribution to the understanding of this incredible city is of some use to you. Thank you, Gabi, Franklin, Maru, Lucho, David, Sergio, Helen, Adrian, Andrea, Mariel, Miki, Iñaki, Jaime, Sally, Diego, and so many other wonderful people.

Finally, I would like to thank all my dear friends that have shared with me these two years in Delft and Barcelona. Regardless of how we remember this time in the future, you gave value to the present, and I hope to never forget that. I want to thank specially Diego, Gaby, Anna and Sule for walking together with me in different ways, for *acompañarnos*, and letting me to get to know the great people you are, Abraham for bringing me out of the faculty and reminding me about the important things we tend to forget when we are focused on our work, and Klaar and Bart because somehow we did the journey from Peru to the Netherlands together. You all made this experience and all its ups and downs worth it.

FIG. 1.1 Map of the Andes mountains and part of the Pacific coast of Latin America. Source: Seguí Encyclopedia.

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PURPLE BOXES

Purple boxes are used throughout the graduation project report either to highlight key concepts or to provide examples of existing practices related to the key concepts developed in the different chapters.

If it is not defined by a symbol, North is always pointing to the top of the page in all maps developed in this graduation project. Graphic scale is always specified.

Abstract

Like many other Latin American cities, Lima experienced explosive population growth during the last century. Its population went from 600 thousand people in 1940 to nearly 9.5 million people nowadays. Former agriculture fields between the coast and the beginning of the Andes mountains were quickly filled with urban developments. Neither the public sector nor the private housing market provided decent living conditions in the city for all these newcomers. 34% of the city's land was developed informally (Municipality of Lima, 2013a) and 70% of the houses were to some degree self-built. The process of urban development and, specifically, the control of the space through land ownership, generated a segregated city. The urban poor usually accessed low-cost land or housing in areas exposed to high levels of risk, with accessibility problems or lack of basic infrastructure.

The current process of urban development, along with a quantitative understanding of housing in policy, continues reproducing socio-spatial segregation today. Buying a plot to land traffickers on the steep slopes of the periphery is the primary way for the low-income population to access a place to live in the city.

This graduation project has two main goals. On the one hand, it tries to understand the relations between housing, urban development and socio-spatial segregation in Lima. On the other, it explores the potential of housing (understood as a process) to develop alternative models of urban development and reduce socio-spatial segregation, in search of a more just city.

1 – Introduction

Since the beginning of urbanization, cities have always been a place for exchange and interaction: a safe zone for strangers to meet and exchange goods, knowledge or culture. These exchanges create a "process of hybridization" (Secchi, 2013: 19) that makes cities alive, constantly changing and producing new identities, new ideas and new subjects (Secchi, 2013).

Nevertheless, meeting and engaging with the stranger, the one who is different, is not always easy. Interacting with the different one gives us a better understanding of ourselves. It questions us. It often reveals potential and existing conflicts with other individuals or groups but also within ourselves and the ones alike. Rejection of these conflicts is often translated into rejection and spatial exclusion of the ones who make them visible. Narratives are then put in place as strategies of exclusion of "the other"; exclusion from the benefits of the city, the group or the territory. "They were born somewhere else", "we were here first", "their traditions or culture don't fit here", "we own what we have thanks to previous generation's work and struggle", "they haven't done anything to earn it", etc. These narratives, usually created by the groups in power to keep control and define the distribution of wealth, resources or power itself, often try to stigmatize the poor (Secchi, 2013: 35), the disadvantaged, the one whose presence questions our privileges.

The areas and processes developed by poor population to establish themselves in the city have often been referred to as marginal, areas whose urban development process has taken place separately from the established system (Solà Morales, 1971), even though the established system was often the one responsible for their exclusion (Roy, 2005; Turner, 1972). Among the various tools of the establishment to generate this situation in many cities, housing, along with a quantitative understanding of it in policies and projects, has been and is still crucial to stigmatize and displace the urban poor from the benefits of the city.

Latin America is one of the world's most unequal regions (Amarante et al., 2016). Massive migrations from poor or vulnerable rural areas produced its rapid urbanization during the 20th century. These exposed inequality and made it visible in cities. Due to the extraction-based economy model and the political and social characteristics of many countries in the region, cities did not grow through the supply of jobs, but through the reproduction of poverty (Davis, 2006: 16).

Lima is a clear example of a process of explosive urbanization which was guided by an unbalanced struggle for resources and representation, and that crystallized in a socio-spatial segregated city (Fernández de Córdova & Fernández-Maldonado, 2016). It is a city with different degrees of exclusivity, where different people do not have so many opportunities to meet and exchange. The control of the land and the interests of the elites and the economic power have defined its development and the establishment of the status quo. Moreover, housing policies, by understanding housing as an object that is provided and consumed according to market rules, are often part of the problem rather than the solution.

Despite the complexity of this situation this graduation project tries to reflect on its causes and to explore alternatives by learning from the ordinary (Habraken, 2000; Robinson, 2006) to overcome the process of urban development that reproduces segregation in Lima nowadays.

The development of any alternative needs a switch in our understanding of housing. Housing understood as an object that is consumed and provided is subject to the market's desires. This work uses as basic framework John Turner's approach of housing as a verb (1972, 1976) and explores the possibilities of housing as a process for strengthening collectivity, development of centrality and inclusion of the disenfranchised from power in the process of urban development.

Alternative urban developments implemented in Lima are studied, along with housing policies, approaches and reflections from different authors and places in order to have a better understanding of the mechanisms and elements that produce socio-spatial segregation in this city. Special attention is paid to the ordinary, as it consists of everyday activities that shape the environment (Habraken, 2000). Lastly, an exploration through spatial strategies and designs aims at exemplifying potential alternative developments under the approach of housing as a process, using and changing current tools and policies.

Alternatives are needed. The exploration process of this graduation project is part of my process of positive hybridization after almost seven years in Lima. I apologize if it has oversimplifications and misinterpretations of its reality, but this is a work in progress. It is just my humble attempt to expand our understanding of the potential of this fascinating city and its inhabitants.

PART 1

Research Design

Problem statement, Theory framework Proposed methodology and expected outcomes

“Al inmenso pueblo de los señores hemos llegado y lo estamos removiendo. Con nuestro corazón lo alcanzamos, lo penetramos; con nuestro regocijo no extinguido, con la relampagueante alegría del hombre sufriente que tiene el poder de todos los cielos, con nuestros himnos antiguos y nuevos, lo estamos envolviendo. Hemos de lavar algo las culpas por siglos sedimentadas en esta cabeza corrompida de los falsos wiraqochas, con lágrimas, amor o fuego.”

José María Arguedas (1962) From the poem “A nuestro padre creador Túpac Amaru”

“We have arrived to the big town of the lords and we are shaking it. We reach it and we penetrate it with our heart; with our non-extinguished joy, with the flashing joy of suffering men who have the power of all skies, with our ancient and new hymns, we are shaking it. We must wash the guilt accumulated for centuries in this corrupted head of the false wiraqochas, with tears, love or fire.” (translated by the author)

2 – Problem statement

Lima's growth in the 20th and 21st century / Process of urban development / Housing understanding as part of the problem

During the 20th century, Lima's explosive population growth turned into a severe housing crisis (Calderón, 2016). The way this crisis was dealt with created high levels of socio-spatial segregation. Contrary to the idea that the State and the private sector were unable to cope with the problem, planning, policies and mutual agreements between different sectors consciously reproduced inequalities into space (Fernández Maldonado, n.d.). In this chapter, an overview on this context of explosive population growth and its relationship with the city's urban development is presented.

FIG. 2.1 (top to bottom) (1) Costa Verde (Miraflores), 2010. Source: Cole Williams. (2) Settlements on the hills and Atocongo cement factory (Villa María del Triunfo). Source: BarrioMío, 2013. (3) Gamarra (La Victoria) 2010. Photo by the author. (4) The "wall of shame" between San Juan de Miraflores and Surco. Source: Utero.pe (seen on March 2019 http://utero.pe/wp-content/uploads/2017/06/341836.jpg)

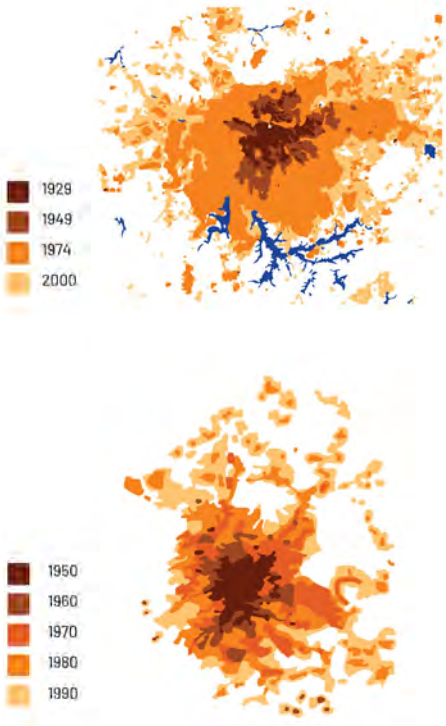
2.1 – **Lima, a city of migrants**

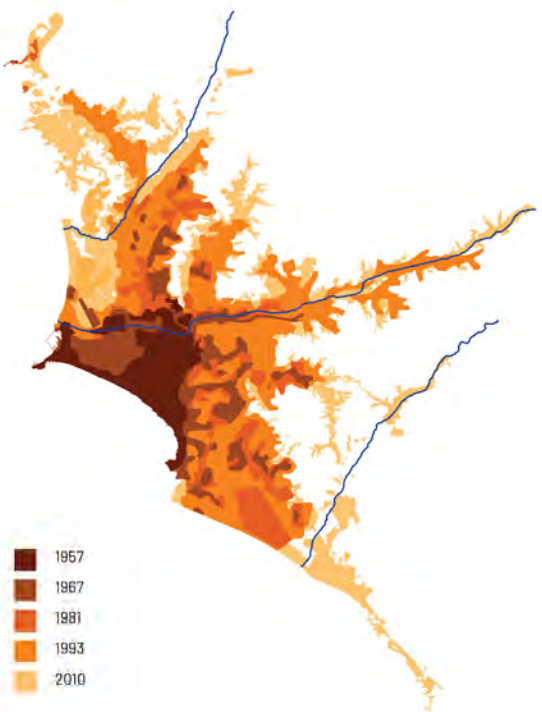
Lima, the capital city of Peru, is in the Pacific coast of South America, between the Andes and the ocean. Only 40km away from the coastline its topography reaches already 4,000 metres above the sea level. This geographic condition traps the clouds and the breeze from the sea and creates a very high relative humidity, with values that easily go over 90%. Lima is also located on the desert strip of land that goes from Atacama (Chile) until the border with Ecuador. It is the world's second biggest city located in a desert, after Cairo. It almost never rains, and a humid fog stays in the air, creating what local people call the ***donkey's belly*** (la panza de burro), a grey never-changing sky that stays during long periods of the year. The temperature is also not too extreme, ranging from 10°C in winter to 29 or 30°C in summer.

It was founded by the Spanish colonists on a productive valley in which several settlements had been established since the 7th century by different cultural groups (Lima, Ychma, Collique, etc.). Three rivers irrigate this area: Rimac, Lurín and Chillón. Callao, a port city that belongs to a different province, forms a conurbation with metropolitan Lima. It was the main port in the South American Pacific during the colonial times and it is still one of the most important ports in South America. Peru's biggest airport, Jorge Chávez, is also located in Callao province.

Peru's economy has been centralized in Lima since the Spanish colony, when it was the main exit point for all the goods and resources plundered during Peru's Viceroyalty. There have been some efforts to decentralize the country, but Lima is still the political, economic and population centre of the country. Even though other cities are economically developing at a fast pace during the 21st century, Arequipa, Peru's second biggest city, has today only 10% of Lima's population (INEI, 2017). A high percentage of the country's economy is within the informal sector. 64% of all jobs outside the agricultural sector and 19% of Peru's GDP belong to the informal economy (Ceplan, 2016).

All these geographic, political and economic factors made Lima the main attraction point for Peruvian migrant population during the 20th century. Like many Latin American cities, Lima experienced a very fast population growth during the last century. Lima's population grew from 600 thousand people in 1940 to nearly 9.5 million people nowadays. Since the 1940s, there were massive migrations from the interior of the country to the capital. People from rural areas or small cities moved to Lima in search for opportunities, services and goods that they could not access in their regions, such as jobs, healthcare or higher education for their children. Many left their original settlements after one of the many disasters experienced in Peru (earthquakes, el Niño, flooding), an economic crisis or escaping from violent conflicts. During the 20th century, population grew at an average rate of 130 thousand inhabitants per year until the 2010s (figure 2.4), reaching 170 thousand inhabitants per year during the internal armed conflict in the 1980s (Matos Mar, 2012).





This explosive population growth was experienced during the 20th century in other cities in the region (figure 1.2) , such as Bogotá, Guayaquil, Medellín, La Paz, El Alto, Caracas, Sao Paulo, Mexico city, Rio de Janeiro, Santiago de Chile and many others. In Lima, the city continuously spread like an oil stain over its territory (fig. 2.3). The space between the coast and the beginning of the Andes mountains was slowly filled with settlements, many of them informally built.

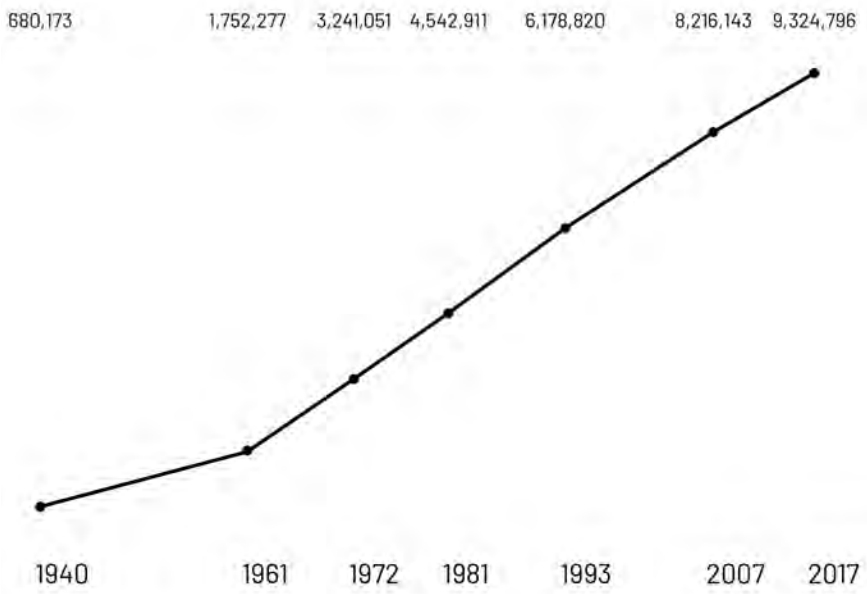


FIG. 2.2 (left) Urban expansion in Sao Paulo and Mexico CIty. Source: Developed by the author with data from Herrera (2015), Carrasco (2008)

FIG. 2.3 (right) Urban expansion of Lima in the 20th century. Source: Developed by the author with data from Matos Mar, J. (2012) Estado Desbordado y Sociedad Nacional Emergente. Universidad Ricardo Palma.

FIG. 2.4 (bottom) Lima´s population growth. Done by the author with data from INEI (National Institute of Statistics and Informatic, Peru)

2.2 – **Process of urban development**

Urban development is a process of production or intensification of the built space in relation with an existing urban area. It has interrelated physical and social structures that influence one another (Hillier, 2008).

1 The physical or spatial structure involves the geographical environment (location, land or landscape) and the built environment (size of the development, street configuration, empty spaces, size of blocks, organization of plots, etc.);
2 The social structure includes the social configuration (origin, organization or socioeconomic group), the governance structure (who made the decisions, involved stakeholders in the process, political context) and the regulations (policies, plans, regulations on land tenure) .

Neither the public sector nor the private housing market provided decent living conditions in the city for all these newcomers. 34% of the city's land was developed informally (Municipality of Lima, 2014) and 70% of the houses were to some degree self-built[1]. Confrontation and, sometimes, *mutual agreement to look the other way*[2] between formal and informal developments generated a segregated city. The urban poor often accessed low-cost land or housing in areas exposed to high levels of risk, with accessibility problems or lack of basic infrastructure, while the land owners secured their land and were able to speculate with it afterwards. This pattern could be observed since the first informal urban developments in the city. Leticia, a settlement on the slopes of San Cristobal hill (fig. 1.5-1), was formed in 1933 when low-income population lost their houses due to a flooding event in Cantagallo (a neighbourhood by the Rimac river) in 1932. The government of Sanchez Cerro granted permission to the displaced population to occupy the steep slopes of this rocky hill close to the centre of the city and without any basic services or the necessary infrastructure to live. Although the physical form and the relations between the actors changed, this pattern has taken place in Lima until nowadays. Lima's vulnerable population (newcomers or low-income people) always ended up living in the cheapest land of the city. Cheapest meant also the least accessible, least service-provided, highly exposed to risks, etc.

Even if there have been ever since many attempts to find solutions for vulnerable communities in need of dwelling, planning and social housing programs have failed both to provide decent living conditions to low-income newcomers and to reduce the social spatial segregation. Formal housing developments on private land always targeted high- and middle-income population, while social housing policies have until today theoretically targeted low income population but have usually benefited middle classes (Calderón 2016). In the case of Leticia, for example, Piedra Liza neighbourhood was built by the State in 1936 for the displaced population in San

[1] La República (19th May 2018) Autoconstrucción informal en Lima llega al 70%, advierte ministro de Vivienda. Seen on 14-02-2019 in https://larepublica.pe/sociedad/1245295-autoconstruccion-informal-casas-lima-llega-70-advierte-ministro-vivienda

[2] Tacit agreements between land owners, the State and community organizations fostered the occupation of specific land in the city, preserving high-value areas for private developers (Calderón, 2016)

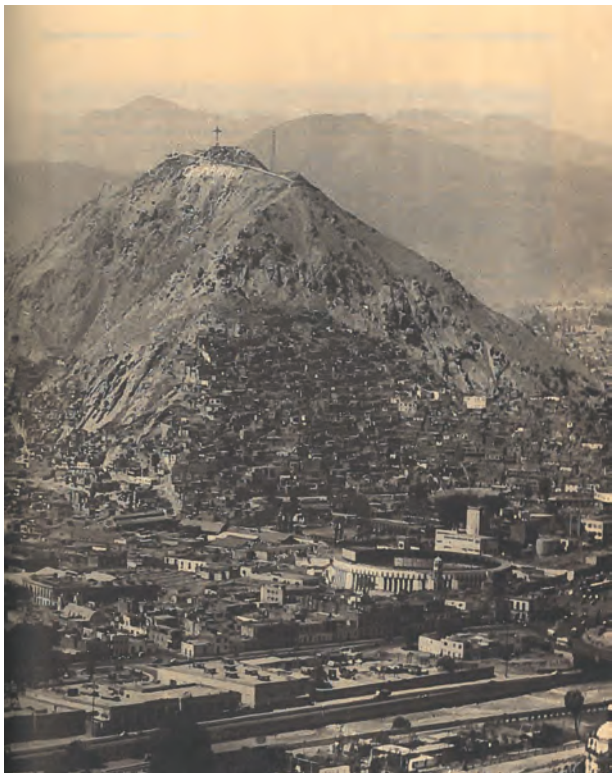


FIG. 2.5 (top to bottom and left to right) (1) San Cristobal hill and Leticia settlement in 1955. (2) Violeta Correa settlement in the periphery of Lima. (3) Precarious settlement in Lima between the 1950 - 1970 (4) Settlement close to the city centre of Lima between the 1950 - 1970. Source: Matos Mar, J. (2012) Estado Desbordado y Sociedad Nacional Emergente. Universidad Ricardo Palma. The original source of the images are (a) Peruvian air-photographing service, (b) Carlos Domínguez and (c)(d) Comercio newspaper. (e) Settlements on the hills of Valle Amauta (Ate). Source: BarrioMio program, 2013

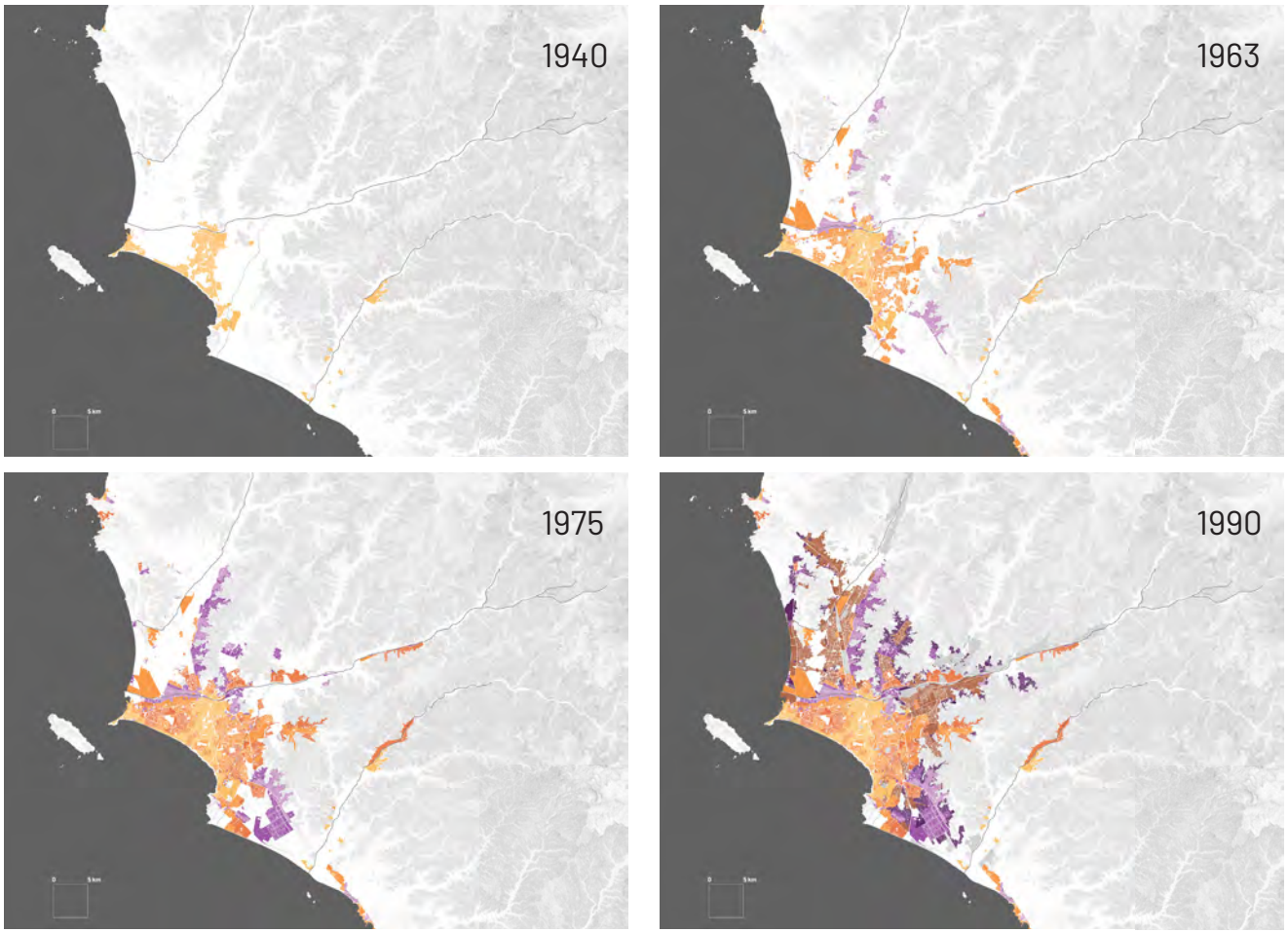
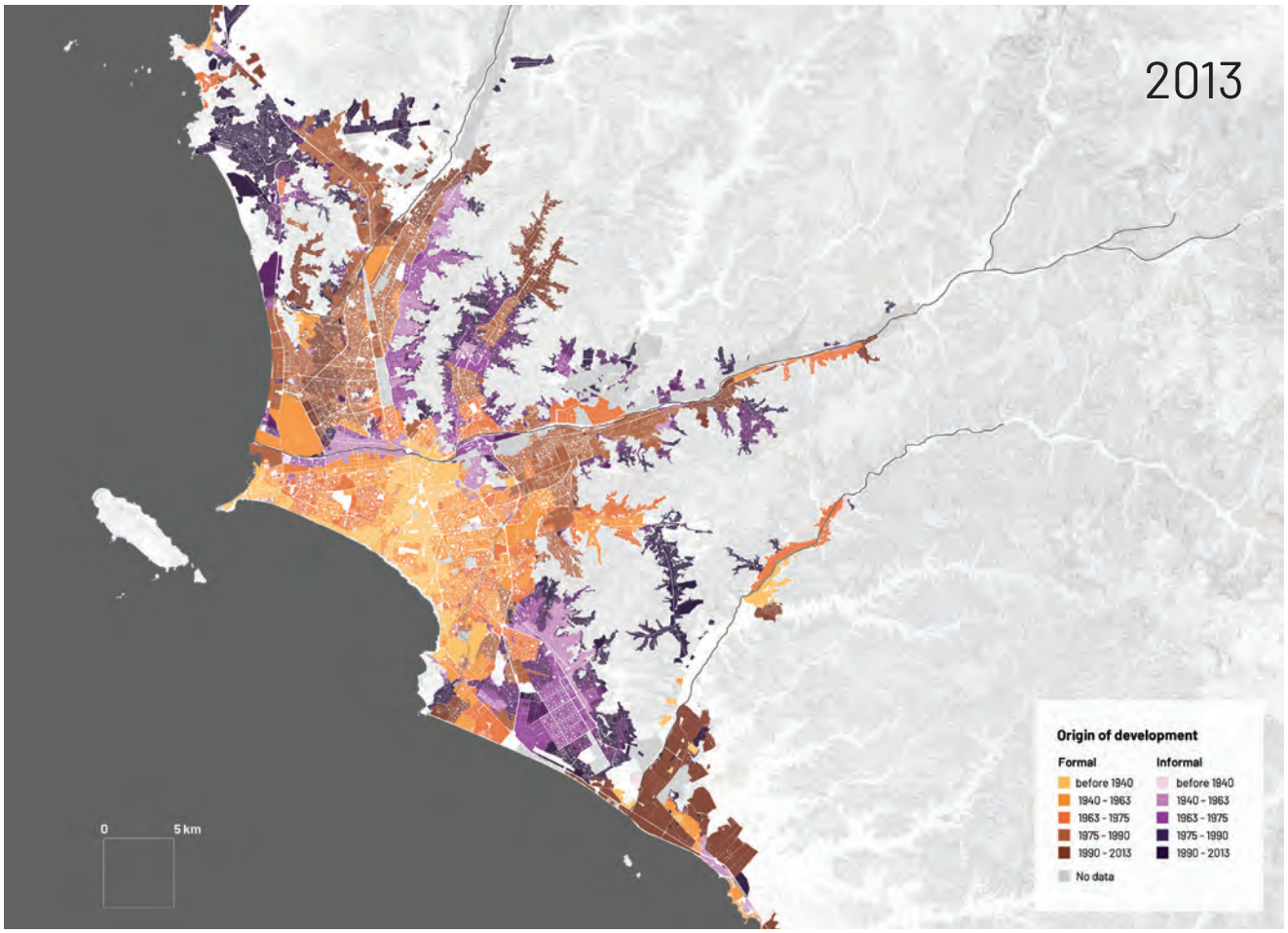


FIG. 2.6 Types of urban development in Lima throughout the 20th and 21st century. Sequence by years: (1) 1940, (2) 1963, (3) 1975 and (4) 1990. Developed by the author. Source of data from PLAM2035 (Municipality of Lima 2014)

Cristóbal hill. Nevertheless, the rent of these apartments was too high for the dwellers of Leticia and most of them decided to stay on the precarious settlement on the hill. Low-middle classes rented the apartments in Piedra Liza (Calderón, 2016). Spatial and housing policies in Lima have not only failed in providing decent urban living conditions for the newcomers and other vulnerable population but have actually often fostered spatial segregation in the metropolitan area of Lima by expelling them to the lowest-value areas of the city. Socio-spatial segregation decreased even more their chances to overcome material poverty or lack of access to services and goods (Fernández Maldonado & Fernández de Córdova, 2016).

Spatial segregation has been experienced in Lima in different ways during the 20th century and it has always had a close relation with the control of space and, specifically, land. If in the 1930s and 40s the urban poor would occupy land in the hilly and low-cost areas next to the city centre, later in the 60s and 70s, when the city expanded, they would be stirred to the periphery, to non-productive sandy land (fig. 2.5-3,4, and 2.6-2,3,4). Nowadays, most low-income population who need a place to live buy land on the slopes of the city to land traffickers, often in risk areas and without access to basic services (fig. 2.6-5 and 2.7-dark purple areas). These schemes of constant expulsion and segregation through time are recurrent in many Latin American cities. According to Pedro Abramo (2012), some of its characteristics



are a complex scheme of relations and interdependences between formal and informal sectors, processes of self-organization and self-management of the built environment, socio-spatial segregation and processes of simultaneous dense and diffuse development.

The history of urban development in Lima has often been a history of fight and negotiation for the control of the space: people struggling to get a place in the city in which they would afterwards build their own basic dwellings, private owners seeking to secure their land from the newcomers so they could still speculate with it, the public sector seeking legitimization through negotiating and allowing both practices.

The process of urban development that has taken place in Lima, along with control of the space, has created a segregated city.

FIG. 2.7 Types of urban development in Lima throughout the 20th and 21st century. Situation in 2013. Developed by the author. Source of data from PLAM2035 (Municipality of Lima 2014)

2.3 – **Housing understanding as part of the problem**

FIG. 2.8 Housing developments in Lima. Source: eleconomistaamerica.pe Seen at https://www.eleconomistaamerica.pe/economia-eAm-peru/noticias/8224082/03/17/CL-Programa-de-viviendas-sociales-impulsara-la-economia.html (June, 2019)

FIG. 2.9 Social housing modules built in Peru. Source: Andina. Seen at https://andina.pe/agencia/noticia-quienes-pueden-acceder-a-techo-propio-actualmente-y-cuanto-es-subsidio-605205.aspx (June, 2019)

FIG. 2.10 Incremental housing project in Villa Verde by Elemental (Constitución, Chile) Source: Elemental Chile. Seen at https://www.archdaily.com/797779/half-a-house-builds-a-whole-community-elementals-controversial-social-housing/580897ebe58ece3c66000190-half-a-house-builds-a-whole-community-elementals-controversial-social-housing-image?ad_source=myarchdaily&ad_medium=bookmark-show&ad_content=current-user (May, 2019)

FIG. 2.11 (next page) A simplified model for the housing process based on Geddes and Bertalanffy. Source: Turner, J. (1976) Housing by people.

Rapid urban growth influenced different approaches on housing during the 20th century in Lima and other areas in Latin America. Either the State or the market would be in charge to 'provide' housing for the increasing demand. During the last 30 years, housing has been seen as a finished individual commodity (Desmaison, 2016) to be delivered to people. This increased the perception of housing as a speculative financial asset (UN-Habitat, 2015), denying many of its other dimensions, such as its role in peoples' lives or its relation with the city in physical, social or environmental terms.

Not only in Peru and Latin America, but in most countries of the world, housing policies have been focused on the implementation of as many houses as possible for an increasing housing demand. Even though this approach usually favours the implementation of big-scale projects, top-down managed by actors with big-scale economic means, such as the State or housing developers and corporations, it also tends to forget that informal markets and progressive self-construction have often provided more houses than the State and the market. This was clearly seen in Lima during the 20th century, where 56% of the population in 2000 lived in areas developed outside the legal city (Calderón, 2016: 224).

Housing, understood as a commodity, is thus produced and consumed. On the one hand, this means that its value is economically defined and, therefore, dimensions that are difficult to monetize but that are inherent to housing (such as self-realisation or urban sustainability), are often left outside policies and housing developments. On the other hand, if housing is a commodity, the quality, place and type of house, thus the decisions on how to live, will depend mainly on each person's economic possibilities. Even though the State has sometimes tried to counterbalance this type of inequalities, urban growth shaped by these premises has often created fragmented, unequal and dysfunctional cities (UN-Habitat, 2015).

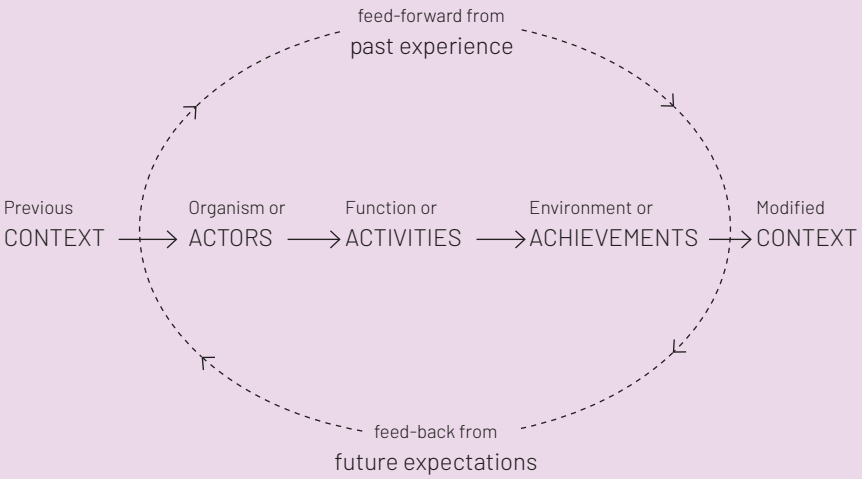
It is not the main goal of this graduation project to discuss the negative impact of massive housing developments or how social housing policies often benefit private investors and developers. Nevertheless, it is acknowledge that *how* housing is understood plays an important role in any urban development process and its outcomes.

An alternative approach: Housing as a verb[1]

In English language, housing is both a noun and a verb. In opposition to understanding housing issues as a quantifiable matter, John Turner (1972, 1976) proposed to see housing as a verb, as a process rather than an object. Housing would thus be a basic and relevant activity that can act as a means for personal fulfilment through giving an opportunity to the individual or the collective to take "responsibility for decisions that shape one's own life" (1972: 153).

According to John Turner (1976: 63), housing processes have three elements: "People, the things they do and the relationship between the two". Turner refers to these relationships as the activities that shape the environment. Housing processes would therefore modify the existing context through activities, or decisions, influenced by a feed-back and feed-forward loop of future expectations and past experiences (fig. 2.11). The same as the urban development process, housing takes place in time, influences and is influenced both by the physical and social environment (context).

This understanding of housing provides a wider framework in order to look beyond the house as a commodity, giving the possibility to challenge the current quantitative goals of housing tools and policies in Peru.



1 The name of this purple box is borrowed from the famous article by John Turner (1972) "Housing as a verb", included in the book Turner & Fichter (eds) (1972) *Freedom to Build, dweller control of the housing process*. Collier Macmillan, New York

3 – Theoretical framework, proposed methodology and expected outcomes

Research motivation / Research question and sub-questions / Theory framework / Methodology steps and expected results / Summary

In this chapter, the methodology of the research will be presented and explained in relation to the research questions and motivation. There is as well a brief introduction to the theory framework in order to introduce some of the authors that will be considered for this graduation thesis. At the end of it, there is a complete overview of the proposed process: From the main research question to the outcomes expected in each part.

3.1 – **Research motivation**

The main purpose of this graduation project is to understand the reasons that create spatial segregation in Lima and to explore what parts of the urban development process need to change to foster a more just city, in which a broader set of actors has a say in its development. A city in which newcomers or vulnerable population are not necessarily left without choice on where or how to live.

My professional practice on related topics in Lima for more than six years pushed my interests and efforts to work on this issue. I will also use it to explore many of the findings and thoughts that I have learnt and discussed over this time.

3.2 – **Research question and sub-questions**

What are the relations between housing, urban development and socio-spatial segregation in Lima? And what is the potential of housing to reduce socio-spatial segregation and produce a more just city in Lima?

These questions lead, firstly, to a contextual sub-question (What):

– What does it mean a **just city** in the context of Lima in relation with socio-spatial segregation?

Three analytical questions (How):

– What are the relationships between **spatial structure** and socio-spatial segregation?
– What are the relationships between the **decision-making process** and a just city in the case of Lima?
– What lessons can we extract from the **history of urban development** and housing policies in Lima?

And two exploratory questions, that will drive the design process:

– What is the **role of housing** to reduce socio-spatial segregation?
– What sort of **tools, policies or strategies** should be implemented or changed in Lima to reduce socio-spatial segregation?

3.3 – **Theoretical framework**

The theory framework used to explore these questions draws from three different sets of authors and bodies of knowledge. (1) Urban morphology, (2) spatial and social justice and (3) studies on the Global South and urban informality. Urban morphology provides a framework to understand the relationships between spaces and activities, that is the role and intention of the actors (society) that make decisions in an urban development and the space, related to both the existing environment and the spatial outcomes of the decisions. Spatial justice theory is used to explore the concept of a just city, or a just urban development in this case, in opposition to socio-spatial segregation. Authors (Calderón, Fernández de Córdova & Fernández-Maldonado, Roy, Watson, etc.) and studies on the Global South and urban informality, many of them from Lima and Peru, are referred and used along the whole research work as a way to contextualize and transform concepts for the specificity of Lima. It is important to underline that many of the decisions of the process of urban development in Lima take place inside a range of formal and informal activities. Urban informality studies are also used to understand the complexity of this gradient of practices.

As a preliminary remark to the theory framework, it is acknowledged that a substantial part of the theory that is used in this graduation project comes from western scholarship (Susan Fainstein, N. John Habraken, David Harvey, Patsy Healey, Bill Hillier, Manuel de Solà Morales, Iris Marion Young) and cannot be directly applied in the context of Lima, which has particularities that differ from the western cities used by most of western research in spatial justice (Fainstein, 2011:5) or urban morphology (Mc Cartney & Krishnamurthy, 2018:2). Knowledge transfer has often been problematic and transferring planning practice from North to South was many times a way of colonization, either to provide acceptable living conditions to foreign settlers or to have administrative or economic control over territories (Watson, 2016).

This "western approach" is nevertheless transformed and complemented with other views from different contexts that could provide specificity both to the social dimension and the morphological dimension (Vanessa Watson, Jennifer Robinson, Pedro Abramo, Shelagh McCartney, Sukanya Krishnamurthy, José Matos, Julio Calderón, Ana María Fernández Maldonado).

Moreover, it might be relevant to approach this knowledge transfer discussion through the concept of "ordinary cities", put forward by Jennifer Robinson (2006). She proposes to go beyond a hierarchical classification of cities in which developing cities must orient their economies and policies in order to become "developed" cities, or move from the conception that there is a linear trajectory from traditional to modern cities. Being those two concepts (modernity and developmentalism) defined mainly from a western and competitive approach, she proposes to learn from the diversity of and within cities, considering not linear or incremental but complex and diverse relationships between and within cities. This, she argues, would be positive not only for cities in the Global South, but also for western or

supposedly modern cities. In this respect, this graduation thesis aims at seeing the diversity in Lima and learning from it. The analysed cases are not steps in the race for development or modernity, but examples from which we can learn good lessons. An understanding of Lima's diversity would not only be useful to find context-specific narratives and ways to deal with spatial issues in Lima, but also to extract knowledge that could be used elsewhere, both in the South and the North.

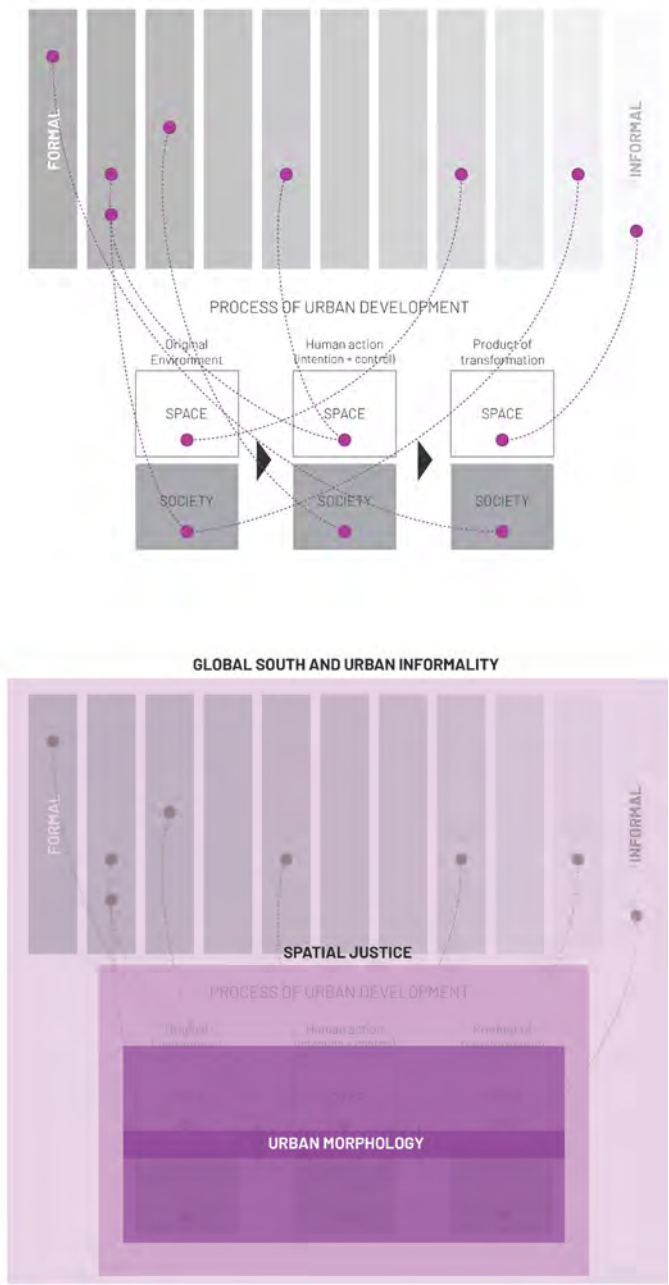


FIG. 3.1 Theory framework diagram: Bodies of knowledge related to each aspect of the project. Developed by the author.

3.4 – **Methodology steps and expected results**

The methodology is initially divided in four steps:

1 **Exploration on the idea of a just city in the context of Lima**

One of the drivers of this graduation project is to understand possibilities for a more just city in the context of Lima, one that doesn't foster socio-spatial segregation through urban development. For this, work will be divided in two parts. First of all, in chapter 4, literature review and case-studies will be used to explore the meaning of a just city, trying to contextualize and ground the theoretical reflection with cases and authors that work in similar contexts to Lima. Authors who deal with topics such as informality, self-management or socio-spatial segregation are studied along with more conceptual texts in the tradition of spatial justice. The outcome of this part is an assessment framework that brings together and explains the methods, variables and indicators used to assess spatial justice, both in its physical dimension and its social dimension. The second part (chapters 5 and 6) consists of an analysis on the potential and failures of urban developments that have already been put in place in Lima during the 20th and 21st centuries, along with its consequences in the configuration of space and society. The outcome of this part is a classification of settlements that is later used in the multi-scalar analysis (chapter 7).

Urban development is a process in which an original situation (a vacant piece of land, a hill, an agricultural field or an existing building) is transformed by some motivation (the need to settle by a group of people, a land owner who wants to profit from his or her property, a Municipality who wants to implement a public facility to provide access to specific services). This transformation and its geographic and social limitations (the steep slope of a piece of land, lack of economic resources by a group of people, land-use regulations) take place in a decision-making process that has both physical and social outcomes. On the one hand, the development process would for example define a street pattern of a neighbourhood or influence the typologies of houses. On the other, it could delay the individual land ownership of the dwellers or could influence how strong the community organization is.

	PHYSICAL	SOCIAL
ORIGINAL ENVIRONMENT	Slope gradient, type of soil	Political context, social organization, original property
DECISION MAKING PROCESS	Size of the settlement, size of plots, open space ratio	Developer, regulations, social organization, decision process
OUTCOMES OF THE TRANSFORMATION	Housing/population density, FSI, urban integration, land use(s), risk exposure, access to services	Socioeconomic diversity, land tenure

TABLE 3.1 Preliminary matrix of physical and social variables considered for the urban development process. Source: Developed by the author, based on Kropf, K. (2017) The handbook of urban morphology. UK. John Wiley & Sons Ltd. and Conurb (2017) Informe de parámetros urbanos para app lotizador. Lima (not published)

2 **Multi-scalar analysis of types of urban development and their relation with the socio-spatial segregation in Lima**

Even if the strategies and housing policies put in place in the 20th and 21st centuries to provide affordable and decent dwelling have not been successful in preventing socio-spatial segregation, Lima has been a very important urban laboratory. Many theories regarding both formal and informal developments were tested for decades (Housing Units, progressive housing in PREVI, sites and services by ENACE, technical assessment of the CRAV and the Technical Office of the Engineering National University, self-managed communities in VES o Huaycán, etc.). Three examples of urban development in Lima from different times (1962, 1984 and 1991) are examined in part III of this report to analyse how different configurations of stakeholders, decisions, formal (planned) and informal (open) practices, as well as diverse spatial configurations were tested. The three cases (chapters 8, 9 and 10) are chosen according to the classification of settlements defined in chapter 7 and are assessed according to the framework developed in chapter 4. An understanding of the relationship between urban development and socio-spatial segregation is developed on three scales: metropolitan, settlement and housing unit (fig. 3.2). One last case, the existing situation (chapter ii), is also analysed for the three chosen areas. In all cases, but especially the last one, the discussion housing as a verb versus housing as a noun (Turner, 1972) remains one of the key approaches of the analysis. A reflection on the different relations through scales, the links between urban structure and decision making processes, and an alternative approach on housing is put forward in chapter 12 as conclusion of the multi-scalar analysis and starting point of the proposal.

3 **Exploration through design.**

Valle Amauta (Ate district), one of the chosen cases of the multi-scalar analysis, is used in part IV of this report to explore a proposal method. Firstly, in chapter 13 and according to the findings of the multi-scalar analysis, areas of intervention are characterized. These are used to put forward spatial strategies on the cross section in chapter 14. The spatial justice assessment goals that were defined in chapter 4 are proposed for each of the areas of intervention in the spatial strategies, providing alternatives to current spatial practices.

Spatial strategies are explored through spatial and process designs in chapter 14.2. The design process takes into consideration different alternatives in the areas defined, connecting different sets of stakeholders and policy tools to them. Even though the initial idea was to develop and present the design as an iterative process, due to time limitations, only one attempt is included in this graduation thesis. In chapter 15, a reflection on the potential scaling up of the proposals in the city scale is presented.

4 **Reflection.**

Using the outcomes developed in the three previous steps, a final reflection is developed in part V, chapter 15. This includes a reflection on the outcomes and process of the graduation thesis, the relevance of the work developed and its limitations. Finally, a set of conclusions is presented in chapter 16.

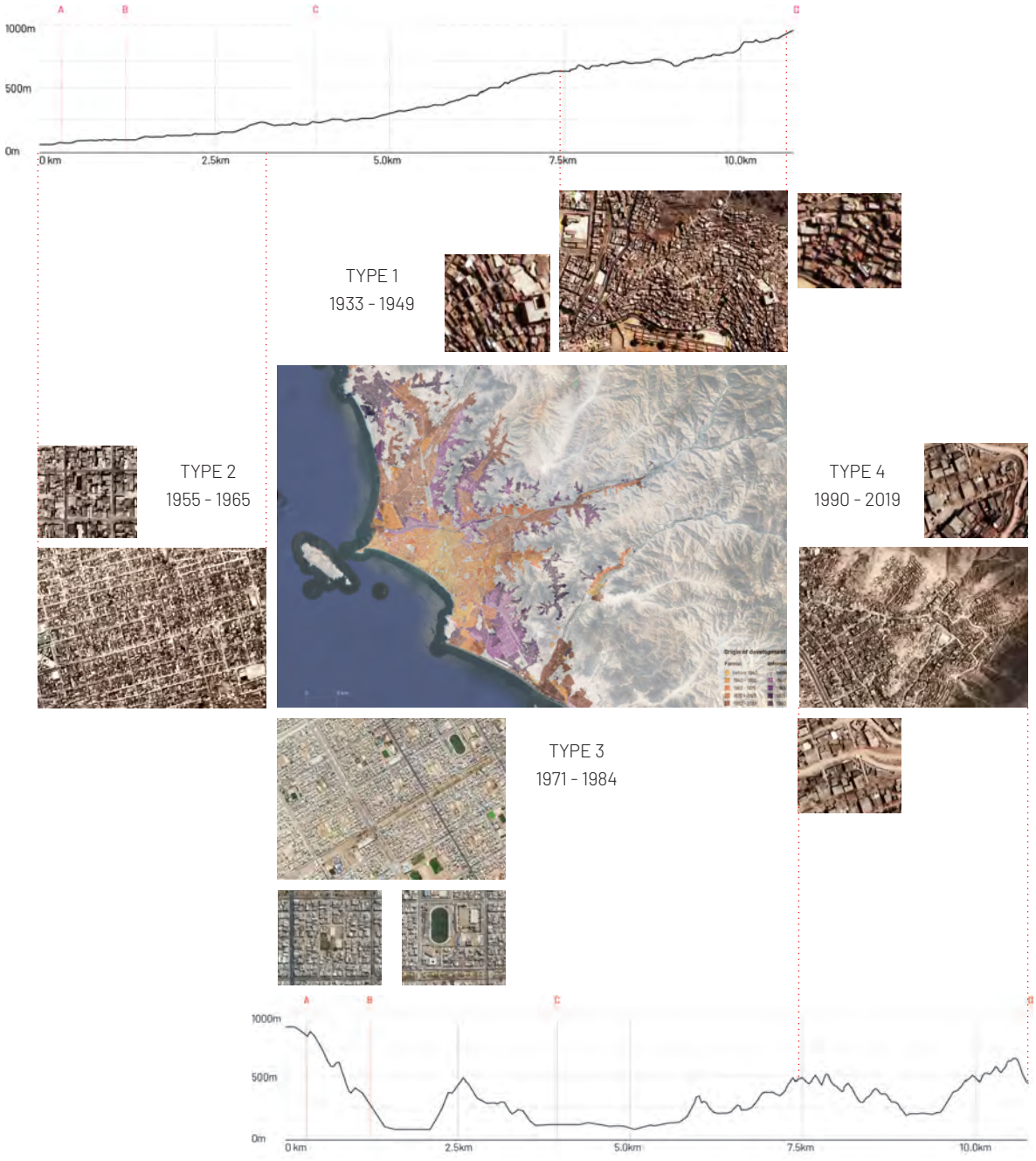


FIG. 3.2 Diagram on the different scales that will be part of the analysis and proposal of the graduation project. Possibilities to interrelate them through the cross-section and the metropolitan structure. Source of the images: Google Earth

3.5 – **Summary**

RESEARCH QUESTION

What are the relations between housing, urban development and socio-spatial segregation in Lima?

And what is the potential of housing to reduce socio-spatial segregation and produce a more just city in Lima?

RESEARCH SUBQUESTIONS

contextual

A. What does it mean a **just city** in the context of Lima in relation with socio-spatial segregation?

analytical

B. What lessons can we extract from the **history of urban development** and housing policies in Lima?

C. What are the relationships between **spatial structure** and socio-spatial segregation?

D. What are the relationships between the **decision-making process** and a just city in the case of Lima?

exploratory

E. What is the **role of housing** to reduce socio-spatial segregation?

F. What sort of **tools, policies or strategies** should be implemented or changed in Lima to reduce socio-spatial segregation?

METHODS

analysis

A. Literature review / Case studies review from Latin America

analysis

B. Mapping spatial segregation in Lima / Analysis of past trends and decision-making process in Lima

C & D. Multi-scalar analysis, stakeholder analysis and decision-making process analysis, on three different settlements

exploratory design

E. Exploration through design on the housing unit and its relation with the neighbourhood and the city, using the reflection and lessons learnt in the analysis.

F. Spatial justice assessment and reflection on the metropolitan scale.

OUTCOMES

analysis

A1. Assessment framework and indicators to understand relation between spatial justice and spatial segregation

analysis

B. Classification of settlements**.**

C. Sets of maps and drawings, according to types of settlements, showing findings on the metropolitan, settlement and housing unit scale,

D. Time-line and stakeholder analyses.

exploratory design

E. Spatial strategies at the settlement scale / Design alternatives on the housing unit, including different settings of stakeholders and decision-making process

F. Recommendations on the metropolitan scale on housing policies, strategies or tools.

PART 2

A fair urban development in Lima

Spatial Justice Assessment / How is Lima a segregated city? / How have we reached this point? / Classification of settlements

"(...) urban theory has also excluded many cities and their citizens from their accounts in the excitement and potential of city life. Theories of modernity (...) have often reserved experiences of dynamism and innovation for a privileged few, and especially for those wealthy cities and their citizens who have laid claim to originating modernity. In the process, poorer cities and marginal citizens have been profoundly excluded from the theoretical imaginary of urban modernity."

Jennifer Robinson (2006) "Ordinary cities. Between modernity and development"

4 – Spatial justice assessment

In a context of deep difference and urban informality

The main goal of this chapter is to operationalise theory in order to have a method of assessment for both the analysis and the proposal of the graduation thesis. Literature review and study cases are the main methods used to develop the spatial justice assessment. Three bodies of knowledge are used: Spatial Justice theory, Urban Morphology theory and studies on the Global South. Along this chapter, some examples from other experiences in Latin America are briefly presented to illustrate some of the theoretical concepts.

4.1 – **Structure of the assessment method development**

Spatial justice theory is used to define goals for the assessment method. These goals are translated into indicators through urban morphology's capacity to relate control and actions by society with their outcomes in space. Studies on the Global South and urban informality are used to contextualize these operations so they can be better applied in Lima. This third body of knowledge informs as well the historical and chronological analysis used in chapters 5 and 6 of this part of the report (¨5. How is Lima a segregated city?¨ and ¨6. How have we reach this point?¨).

This chapter is structured in four parts, including 4.1. In chapter 4.2 theory on spatial justice and studies on the Global South are both used to derive goals for a just city in the context of Lima. The starting point are the concepts of diversity, equity and democracy (Fainstein, 2011) and they are later contextualized by other related and context-specific theory. In chapter 4.3 theory of urban morphology is used to set up a structure to organize these goals. Following Vernez Moudon (1997) approach and complementing it with other authors, such as McCartney & Krishnamurthy (2018), the goals are sorted by scale, time and dimension. Chapter 4.4 explains what is considered as a fair urban development in Lima and it works as the merging of the two previous chapters and bodies of knowledge. At the end of 4.4 a matrix, developed for the assessment of spatial justice in this graduation project, is presented.

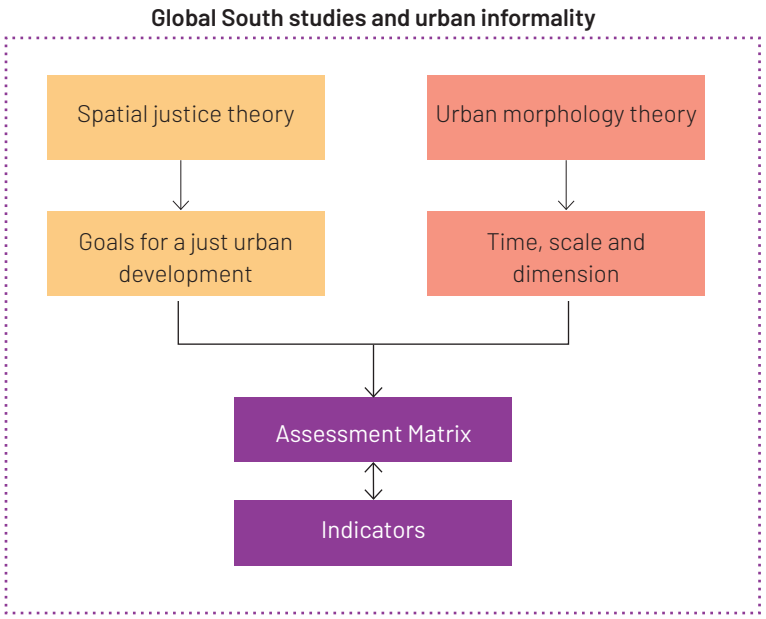


FIG. 4.1 Methodology to arrive to the spatial justice assessment framework. Developed by the author.

Control

Every urban development is part of a process in which decisions and actions are oriented to control the space (Habraken, 2000:127) or to envision the future of a place. In Lima, these are at the same time related to formal or informal planning practices.

According to Habraken (2000), control in the field of urban morphology is "the ability to transform some part of the environment". Control differs from ownership in the sense that use of an space can provide as well control over its elements. For example, tenants control the disposition of furniture in an apartment, or students often change the configuration of chairs and tables in a studio room.

In a city, even though use plays a role, the relationship between control and ownership is much stronger than in a house or a classroom. As Habraken specifies when he talks about place (2000:126), "territorial control is the ability to close a space, to restrict entry". Control is part of the power struggle that defines how the city is, where and how it grows or who lives where. The physical configuration of a city, including socio-spatial segregation in the case of Lima, is the result of the power struggle between different actors, in which some lose and other win. If the result creates exclusion and isolation of a group, there must be another group who benefits out of this. This group may as well have control over the space and, most probably, ownership. In the case of Lima, land owners and their interests have had a very important role in how the city developed (Calderón, 2016). Therefore, a fairer process of urban development will be highly dependent on the possibility to redistribute control of the space and manage the ownership of the land.

As it will be discussed in the following pages, there are many variables that can influence urban development towards a more or less just process, but it will be important to keep in mind who has control over space (and land) and what would be potential or existing mechanisms to distribute and manage control differently.

One more important thing to bear in mind is that control operates differently in contexts of intense formal - informal relationship. Furthermore, urban informality is often seen as representing the failure of regulation and control by the planning system (Roy, 2009). Regulations that try to improve a situation in a specific environment are usually unproductive when there is a gap between the requirements asked to fulfil the improvement and the effective demand (Turner, 1972). Indeed, rather than a situation or condition, urban informality is often considered as "an organizing logic, a system of norms that governs the process of urban transformation itself" (Roy, 2005). It is, thus, a different way of expressing and disputing control over a space and, as such, is interwoven with other sets of formal, explicit or tacit norms.

4.2 – **Spatial justice: Equity, democracy and diversity**

Spatial segregation is a phenomenon in which space is organized "in areas of strong internal homogeneity and strong social disparity between them" (Castells, 1977). Even though this does not mean anything bad in itself, isolation of homogeneous groups could be detrimental for vulnerable and poor population (Fernandez-Maldonado & Fernandez de Cordova, 2016). If isolated, they may have less access to material means in order to overcome poverty or meet basic needs for urban living, or they would be less considered in decision-making processes in the city. In contexts of urban segregation, other social groups, who have the power as well as economic means, may have a say in urban development and how it affects the way they live, as well as a wider access to public goods. Injustice is related to actions that promote this sort of exclusion as well as disadvantages for the ones who already have less (Fainstein, 2011).

According to Susan Fainstein (2011), a just city would be "a city in which public investment and regulation would produce equitable outcomes rather than support those already well off". Spatial justice has, according to the author, three main approaches: equity, democracy and diversity. The emphasis of each of them varies according to different authors.

Equity

The concept of justice is a value laden one and it is also related to a discussion on rights. There are many authors that have discussed and reflected on this topic during the 20th and 21st centuries in the context of the city (Lefebvre, 1968; Rawls, 1971; Habermas, 1984; Young, 1990; Harvey, 1992). Many of them, specially since the last two decades of the 20th century, developed their research and work to argue neoliberal trends and emphasis on government reduction, deregulation and economic growth, which affected urban development and growth in cities globally. As summarized by Robinson (2006:149), the discussion on the balance between economic growth and social well-being (promoting social cohesion, addressing poverty or delivering basic services) has taken place in many ways and in many different cities around the world. Social well-being is often related to a question of rights (who can access land, education, jobs, etc.). The means to achieve a equitable social well-being are therefore linked to welfare-state-oriented political order (Robinson, 2006). These sort of regulations often aim at poverty reduction, material redistribution and an equitable access to services and goods by all population.

If justice is about redistribution and social well-being, questions on *who* defines *what* is redistributed or what are the values behind the idea of social well-being have to be addressed. Vanessa Watson (2016) argues that the idea of the "good city" was behind many of the modernistic ideals put in action through planning and zoning all over the world, often leading to the exclusion of the poor and the protection of property values for the wealthy population. Moreover, what is "good" for society has usually been defined by small groups of the population and has excluded informal sectors and economies all over the world, but specially in the Global South. Thus, excluding also the way of generating an income (or a place to live) of big parts of the world's population. Even though justice takes on different meanings in different

contexts and for different groups, it is also a powerful concept to use in search for fairer planning and urban development processes. Harvey (1992) argues that "universality should be construed in dialectic relation with particularity".

In order to build this dialectic, he puts forward six principles. They would not define, but orient the search for justice (Harvey, 1992). These principles are based on the five faces of oppression developed by Iris Marion Young (1990): exploitation, marginalization, powerlessness, cultural imperialism and violence. Harvey's reinterpretation tries to specify each of them and link them to specific oppressed groups. For example,for exploitation, the principle becomes "non exploitation of labour power" (Harvey, 1992). He adds as well a sixth principle, related to environmental justice: "mitigation of the adverse ecological impacts of social projects" (Harvey, 1992).

It is nevertheless needed to complement the approach of Harvey and Young to understand how this theory on justice can be applied in different contexts, like Lima and other cities in the Global South. Vanessa Watson (2006) uses these six principles to define guidelines for just planning in contexts of deep difference, "characterized by material and cultural difference" (Watson, 2006: 32). For example, non-exploitation of labour power informs the idea "that just planning and policy practices must confront directly the problem of creating forms of social and political organization and systems of production and consumption which minimize the exploitation of labour power both in the workplace and the living place" (Watson, 2006). Even if this guideline may not be specific only for cities in the Global South, reality there might press for other means to arrive to redistribution. In contexts of weak States and intense presence of the informal sector, regulation could be replaced by strong social organization (popular dinning rooms organized collectively by a community to offer cheap meals in the poorest neighbours) or the recognition or acceptance of informal economic activities (e.g. street food-selling).

I draw on Young's faces of oppression, Harvey's principles on justice and Watson's guidelines for just planning in contexts of deep difference to develop context-based goals in relation to the concept of equity:

TABLE 4.1 Goals for a just city derived from the concept of equity. Developed by the author, based on Fainstein, 2011; Young, 1990; Harvey, 1992; Watson, 2006.

Goals for a just city derived from the concept of equity
Productive practices that benefit collectively the members of the community take place and are recognised.
All population has access to basic services for urban living
There is not violent eviction or expulsion
Access to a safe living environment for present and future generations

RELOCATION WITHOUT DISPLACEMENT AND EVICTION

Relocation in Juan Bobo gorge in Medellín (2003)

PUIs (Urban Integral Projects) in Medellín have been widely studied and documented in research and publications across Latin America (Echeverri & Orsini, 2010; EDU, 2014; Molnarova et al, 2017). They are structural urban interventions to implement public services and bring social programs to deprived informal areas of the city. Their goals include social, institutional and physical improvements for these neighbourhoods, as well as the creation of jobs and economic opportunities (EDU, 2014).

Along with the PUI Nororiental project, an urban renewal intervention in the Juan Bobo gorge aimed at reducing the exposure to risk in an area prone to flooding. The strategy included the on-site relocation of the neighbours living in high risk areas. The project explored new typologies of dwellings that used the slopes as an opportunity to implement medium density housing buildings connected to different street levels through bridges and minimizing costs by avoiding elevators. The implementation of new buildings was limited to the need of dwellers relocation, trying to maintain as many original houses as possible and, at the same time, providing space for the water to flow down the gorge.

These new typologies were nevertheless implemented afterwards in peripheral areas of the city as part of new social housing programs, fostering socio-spatial integration by giving room to low-income population in far away locations (fig. 4.4).

FIG. 4.2 (left) Juan Bobo gorge before the intervention. Source: Montoya, 2016 (Limapolis 2016 presentation)

FIG. 4.3 (right) Juan Bobo gorge after the intervention. Source: Montoya, 2016 (Limapolis 2016 presentation)

FIG. 4.4 (bottom) New social housing projects implemented in peripheral areas. Source: Montoya, 2016 (Limapolis 2016 presentation)

Democracy

Emphasis on redistribution and universality applied to the concept of justice was contested by communicative rationality within planning theory. The weakening of the State in many countries during the 80s and the failure of many "blueprint" plans developed in previous decades by technical teams, paved the ground to changing the approach in planning and urban development. A liberal conception of economy and politics fostered deregulation and the reduction of the State and new actors would become part of the development process in cities. In order to understand a better collaboration between actors, different authors (Forester, 1993; Healey, 1997) proposed a stronger focus on the process, rather than the outcome (often linked to the failed "blueprints"). Expressed according to Fainstein's three approaches, this would mean a stronger focus on democracy, rather than equity. According to Patsy Healey (1997), a fair process would have fair outcomes. Therefore, questions such as *who* had a say in the decision- making process, or the type of institutional arena where it took place, would be more important to arrive at a just city than trying to apply redistributive policies to ensure equity. For Healey (1997), concepts, including justice, are socially constructed by different rationalities. Therefore, the role of planning, is to ensure the process is transparent, open and fair.

To this, Fainstein (2011) argues that ideal processes don't exist, and power relations will always play a role in any decision-making process. Emphasis on a fair process would assume a value-neutral State and free and equal citizens, which is often not the case. The rationality of the market (Watson, 2006) is usually defining values in planning processes all over the world but, specially in contexts of the Global South, the liberal assumption of free and equal citizens or social groups, is still an abstraction. Vanessa Watson (2006: 42) also argues that in contexts of deep difference, such as the ones in the Global South, a conflict of rationalities between a rationality of survival (poor population struggling to live in the city) and a rationality of governing (managerial or technocratic public administration) make consensus difficult, if not impossible. According to Watson, "any action will represent an imposition of one group on another as groups (including the state) operate within different and often conflicting rationalities" (2006). This idea of a rationality or a state of pure survival is also mentioned by Kathrin Golda-Pongratz (2007) for the case of Lima, when mentioning the reasons that led to massive migrations from other areas of the country.

Even if a democracy approach shouldn't displace completely emphasis on equity, importance on the process and values related to democracy put forward several questions that need to be address in any planning or urban development process. Drawing on Patsy Healey revision of her own work (2003:124), some of these would be "who has a voice in the decision-making process", "what kind of institutional arenas are used", "what kind of communicative dynamics and exchange takes place", "what kind of knowledge is created" and "by whom or what relations of legitimacy and accountability creates".

The question of creation of knowledge is particularly interesting in contexts of deep difference. It might be one of the few mechanisms that would help an enlargement of thought (Young, 2000) and therefore an approach of different rationalities and an acknowledgement of structural conflicts between them (Watson,

2006). Even if conflicting rationalities make consensus difficult, Vanessa Watson (2016:2273) suggests that understanding the different interactions between them can provide useful insights for planning practice and give some examples that help contextualising the aforementioned questions. In this sense, in contexts of the Global South and others of conflicting rationalities, emphasis on the process would also aim at creating different bonds between involved actors and the city. In contexts of deep difference, the process could become a place to express a group's identity, to create a sense of citizenship and belonging to the place or to build new relations between actors who are, initially, far apart.

Building on the previous authors, I derive some goals in relation to the concept of democracy that could be applied in urban development processes in Lima.

Goals for a just city derived from the concept of democracy
The decision-making process provides spaces to develop citizenship to vulnerable population
The decision-making process can adapt and include alternative practices and positive hybridities (Watson, 2016)
All actors affected in the urban development process have a voice in the decision-making process
The decision-making process creates knowledge on the different actors involved, allowing them to understand the other or the structural conflicts between them. This knowledge is later applied or replicated in other similar processes
New relations of legitimacy and accountability are created between actors

TABLE 4.2 Goals for a just city derived from the concept of democracy. Developed by the author, based on Fainstein, 2011; Young, 2000; Healey, 2007; Watson, 2006 and 2016.

Diversity

Despite Iris Marion Young's (1990:15) acknowledgement of the importance of redistribution and equity for the paradigm of social justice, she argues that redistribution often involves only material goods, leaving non-material issues, such as power or self-respect, outside the idea of justice. She defines a fair society as one in which "each group's voice is heard in the public, through institutions of group representation" (Young, 1990:12). This idea, which would be aligned to the focus on process by communicative rationality theorists, still doesn't completely recognize the power relations of domination and oppression by different social groups. For both Young (1990) and Fainstein (2011), there is another approach needed in the conception of justice: diversity. In this respect, Young proposes to displace the idea of justice towards the elimination of institutionalized domination and oppression. Recognition and acceptance of difference, as well as preserving diversity, become therefore key aspects in a just city. For Young, "ideally, a city embodies four virtues that represent heterogeneity rather than unity: social differentiation without exclusion, variety, eroticism and publicity". For her, promotion of diversity involves also a fairer exchange of knowledge by individuals and groups, collaboration between different groups rather than domination and competition and promotion of self-respect by each different social group. The public space (open and close) will then become one of the most important arenas where these collaboration and

FIG. 4.5 POUSO in favela do Campinho. Source: Jorge Jáuregui. Seen at http://www.jauregui.arq.br/favelas_port_alegria.html (April, 2019)

FIG. 4.6 Urban structure of favela Vidigal, by Jorge Jáuregui. Source: Jorge Jáuregui. Seen at http://www.jauregui.arq.br/favela-bairro-vidigal.html (May, 2019)

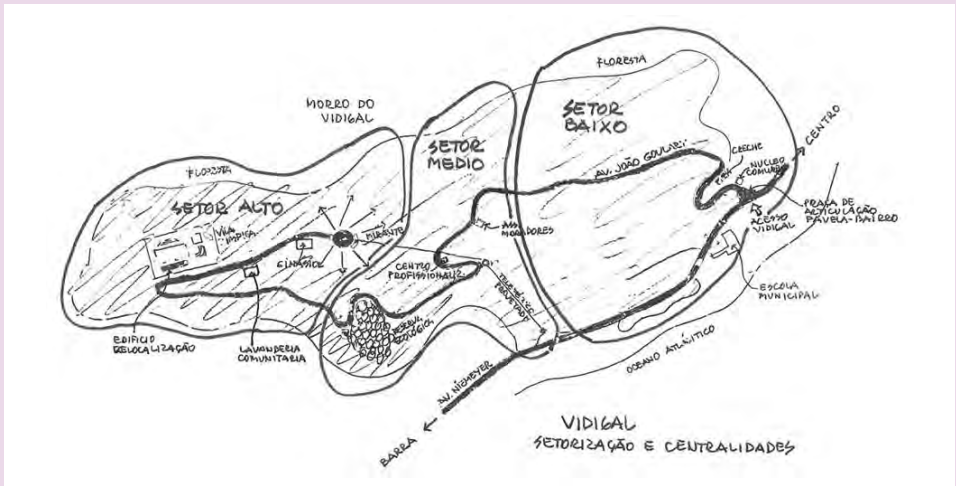
EXCHANGE AND CREATION OF KNOWLEDGE BETWEEN DIFFERENT RATIONALITIES

POUSOS in Favela Bairro slum upgrading program in Rio de Janeiro (1996 - 2001)

Favela Bairro, in Rio de Janeiro, was one of the first slum upgrading programs implemented in the 1990s in Latin America. Funded by the IDB, it is estimated that it benefited between 70 to 75% of the population living in favelas at that time (Calderón, 2014). Its main strategy was to implement small-scale interventions to solve specific problems and bring services in vulnerable areas of the city, such as extending sewage networks or improving accessibility. The hypothesis of the program was that by spatially integrating these areas to the rest of the city, social integration could be also achieved (Andreatta, 2007).

A very important aspect of these projects, was the implementation of the POUSOS (urban and social orientation posts). These small offices were built or implemented by the local government as meeting places between the community and the professional teams from the slum upgrading program. In here, engineers, architects and other public workers could access on-site knowledge of the settlement from the neighbours and social leaders and these could obtain technical knowledge on construction or urbanism that they could use when building their own houses.

There were many positive externalities from this knowledge exchange that went beyond the slum upgrading program itself. A study comparing different settlements revealed that favelas with a POUSO extended horizontally six times less than those without it (Dixon, 2014).



exchanges take place. Public space would then be the space where all different groups can meet.

Jennifer Robinson (2006), in her ordinary cities approach, provides also several reasons to support (economic) diversity as an enabler of a fairer city. Her approach is particularly important in contexts of the Global South, where informal economic activities are often excluded from any sort of official collaboration or planning practice. Preserving diversity at all levels would create potential for new economic activities and potential for collaboration between sectors. This is particularly interesting in two aspects. On the one hand, in contexts of informal economy and lack of presence of the State, urban dwellers often put in place inventive activities and self-organisation in order to overcome common difficulties. These alternative views on the management of the city are often discarded by official policy and traditional planning practices. Keeping a variety of approaches could help to develop new ways to deal with urban issues in which citizen's and State collaboration goes beyond redistribution and planning processes (Mangin& Turner, 1968). On the other, Jennifer Robinson (2006) also mentions that informal economic activities often take place in areas where diversity is allowed. For example, informal businesses often take place inside dwellings. On the contrary, zoning tools often forbid this sort of activities in residential areas. According to the author, "substantial support for informal business activities could be achieved by upgrading poorer residential environment". Space, therefore, should be flexible enough to include several types of activities.

Robinson (2006) emphasises the importance of connecting diverse activities to foster collaboration. In order to do this, she puts forward four ways for achieving a shared institutional and infrastructural environment that include access to regional and international locations through communication networks, wide range of locally available inputs and interactions with different firms, sharing labour resources and skills and common broader inputs of the city infrastructure. From this, it is derived that not only will be important to allow and foster diversity, but also to connect it. Therefore, infrastructure and common spaces will be key aspects to foster collaboration.

Drawing from Robinson's (2006) precepts, Young's (1990) ideas and Fainstein's (2011) definitions, a set of goals derived from the concept of diversity are developed:

TABLE 4.3 Goals for a just city derived from the concept of diversity. Developed by the author, based on Fainstein, 2011; Young, 1990; Robinson, 2006; Turner & Mangin, 1968.

Goals for a just city derived from the concept of diversity
Open ended physical design allows decisions to be made by different actors in different scales. Inhabitants and communities take part in parts of the design and construction process
Open ended physical design allows collaboration between different social groups and actors
The space and regulations foster flexibility in terms of mix of uses and sectors of activities (formal and informal)
Open space has potential for interaction between different social groups (gender, age, socioeconomic sector, race, etc.)
Diverse economic activities (formal and informal, big and small scale) exist and are connected in terms of labour and skill resources, as well as with infrastructure, to metropolitan, regional and international networks and centralities

FIG. 4.7 (next page, left) worker and member of a housing cooperative. Source: Junta de Andalucía, 1999

FIG. 4.8 (next page, right) Recycled housing program. "Ana Monterroso" Cooperative, Montevideo. Source: Junta de Anadalucía, 1999

OPEN ENDED PHYSICAL DESIGN ALLOWS COLLABORATION BETWEEN DIFFERENT SOCIAL GROUPS AND ACTORS

Mutual assistance cooperativism in Uruguay

Mutual assistance housing cooperatives have been able to provide housing to 20,000 people since 1968 in Uruguay (Junta de Andalucía, 1999). They started as a bottom-up initiative that used the association model of the consumption cooperative to access a loan for the construction of dwellings. After 1968 Housing Law, where these way of accessing housing was recognized, more than 500 housing cooperatives have been created. In 1975, one out every two loans given by the Hipotecario Bank in Uruguay were destined to this development system (Junta de Andalucía, 1999).

There are several interesting aspects of the housing cooperatives that deserve attention. Firstly, the purpose of the housing developers is based on their own needs of dwelling instead of the economic profit. Therefore, the construction of houses and the control of the land don´t so easily become part of the speculative market. Secondly, mutual assistance housing cooperatives involve an intense collective organization that remains after the construction. Members of the cooperatives provide labour during the construction phase and the organizations take care of the maintenance and the common decisions that affect the buildings after their construction. Other problems, derived from external spatial, social or political context and conditions, were often faced also in a collective way by these cooperatives (Nahoum, 1984). Therefore, this alternative way of housing development, which later became a common trend for many people, developed a different way of social organization.

4.3 – **Urban morphology and decision-making processes**

According to Anne Vernez Moudon (1997), "the city is the accumulation and the integration of many individual and small group actions, themselves governed by cultural traditions and shaped by social and economic forces over time". McCarthy & Krisnamurthy (2018) cite Evans (2005) to describe urbanization as "the result of millions of design decisions taken by a wide spectrum of stakeholders seeking to solve immediate problems or exploit income-generating opportunities". All these actions define the form of the city and are part of decision-making processes: fair or unfair negotiations between different stakeholders. Societies and space, or the environment, affect each other. Different authors identify the environment as the product of societal changes, while others defend the opposite, that is social processes have their origin in the built environment (Hillier, 2008:218). In any case, there is a strong relationship between the two dimensions: the type of society and the type of space where it is developed. Therefore, in this search for the fair city approach in the context of Lima it will be needed to understand its spatial characteristics and their relations with the governance structure that made the decisions, as well as with the contextualized idea of justice.

Urban form can only be understood through time (Vernez Moudon, 1997:7). Therefore, urban development is always a process in which an original situation (a vacant piece of land, a hill, an agricultural field or an existing building) is transformed by some motivation (the need to settle by a group of people, a land owner who wants to profit from his or her property, a Municipality who wants to implement a public facility to provide access to specific services). This transformation and its geographic and socio-economic limitations (the steep slope of a piece of land, the lack of economic resources by a group of people, a land owner who doesn't want to sell) are part of a process in which decisions and actions are oriented to control the space (Habraken, 2000:127) or to envision the future of a place. In Lima, these are at the same time related to formal or informal planning practices (a zoning plan or an illegal and tacit agreement between an informal developer and a public worker). These decisions and actions will have consequences both on physical space and social processes. On the one hand, planning could for example define a street pattern of a neighbourhood, or the way people locate themselves could influence the density and typologies of houses. On the other, the relation with economic centralities could make the settlement more suitable for the development of specific land uses or the size of it could influence how strong the community organization is.

A very clear connection can then be drawn between this understanding of urban form, the theory on control (Habraken, 2000) and the understanding of housing as verb (Turner, 1976). This reinforces the need to widen up the interpretation of housing and understanding it as a process.

Urban morphology also studies space in different scales. Vernez-Moudon (1997) defines four levels of resolution: the building/lot, the street/block, the city, and the region. These different levels are connected in terms of relations of control (inclusion or exclusion) or integration (sense of belonging) (Habraken, 2000).

On the one hand, each time a stranger wants to take one step forward in penetrating a system (from entering a city, into entering a neighbourhood, or from entering a

house to entering a room), he or she usually needs permission in order to go further. Therefore, a hierarchical relation of control is seen when we go from a higher level to a lower one. Control does not only come from ownership. As said before, actions and use of the space also modify it. Nevertheless, the ultimate control of a space implies the possibility to defend that space from unwanted intrusion (Habraken, 2000:126) and this is often related to who has the right to own the space (be it a community, an individual, a company or an institution) and defines the rules according to which the space can be used.

On the other hand, when going from a lower level to a higher one, relations of integration take place. Being part of a neighbourhood makes someone part of the city. Identity is shaped by relations of integration. There is never one sole urban identity in a city or a neighbourhood and in contexts of deep difference (Watson, 2006) relations of integration are sometimes a bit more complex. Urban identities often exclude specific population groups. This is related to the previous discussion (see chapter 2.2) on the idea of the "good city", in which a specific universal identity excluded many groups and sectors, including informal urban expressions and practices (Watson, 2006).

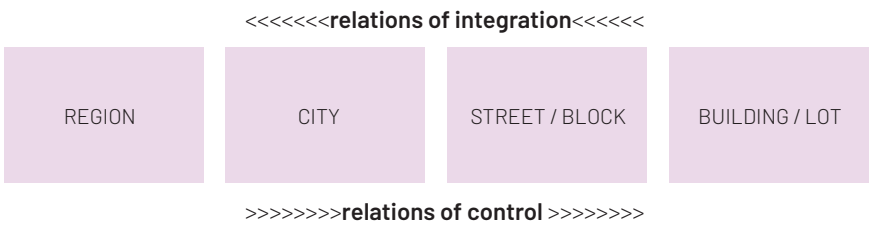


FIG. 4.9 Relation between scales in urban development. Developed by the author based on Habraken, 2000

Vernez Moudon (1997) considers form, resolution, and time the three basic components of morphological studies. Drawing on Hillier (2008) discussion between environment-first and society-first theories, the concept of form could be expressed more accurately as dimension, thus including society and physical space together in relation to the decisions and actions taken to control it. Some of the goals defined in chapter 4.2 have a physical (environmental) consequence, while others are defined initially in space but have a social consequence or cause. Dimension could be a land use, a specific negotiation in the decision making process or the physical qualities of a building.

According to the discussion in this chapter (4.3), three sets of variables are chosen to define the assessment framework: time, scale and dimension. In order to be able to operationalize theory, the concept of dimension is used in the shape of indicators (what can I analyse) that make it possible to assess spatial justice on urban development (goals). These indicators are organized on a matrix or structure according to the other two variables of urban development: scale and time.

When reading urban morphology literature, there is nevertheless a gap when we refer to contexts of urban informality (McCarthy & Krishnamurthy, 2018). Most of the research on this body of knowledge has been carried out in western contexts

with a wide homogeneity in urban development, in which contest in the shape of occupation, self-organisation or alternative forms of urban management is not as frequent as in areas of the Global South. Even when Habraken (2000:27) acknowledges that "the environmental game is not all sweetness and light, nor it is intrinsically fair", many of his examples relate to contexts in which gradual transformations arrive at an equilibrium. Though this might be a possible future outcome for informal disputed contexts, the way to this equilibrium shows particular characteristics that are the consequence of strong dispute and contest. A gradient of ownership rights, a blurry difference between private or public space, temporary building typologies or broader economic decisions that influence the location of informal settlements, are some of these. Even if they could fit in the broader framework of urban morphology theory, they are intermediate and highly variable dimensions that hardly relate to the characteristics of a balanced equilibrium of the "environmental game". McCarthy & Krishnamurthy (2018) refer to this gap when they put forward five variables that should be looked carefully when understanding urban morphology in contexts of high informality:

- Nonspatial social, economic, and political factors that have spatial impact
- The influence of the broader city, and situational factors shaping slum settlements (including location and adjacencies to built and social infrastructure)
- Influence of site factors such as topography and its rate of change on the form of informal settlements
- Circulation space configurations of both public and private movements due to ambiguities of ownership
- Building typology as defined by the permanence of their built form

These variables are incorporated into the framework of this thesis. Nonspatial factors and the influence of the broader city will be related to scale, while site factors, circulation space and building typology will be considered to shape some of the goals and indicators developed in chapter 4.2. The relevant discussion on property and ownership in informal contexts (McCartney & Krishnamurthy, 2018) will be referred to along the whole graduation project. This issue, less defined and usually with more layers than in formal developments, creates a different way of using the space that has an impact on its form, and vice versa. Specific dimensions (size, amount of population as well as density) and decisions made along the process have often a direct relationship to the types or layers of ownership. Therefore, understanding all its layers will be key to understand possible transformations.

As said before, a basic framework to organize goals and dimensions is developed:

TABLE 4.4 Structure framework matrix defined from the three sets of variables in order to analyse urban development according to time, scale and dimension. Developed by the author, based on Vernez Moudon, 1997; Habraken, 2000; Krishnamurthy & McCarthy, 2018; Kropf, 2017.

Scale / Time	Original Environment	Decision-Making process	Outcomes
Street / Block / Unit	Goals (justice) Indicators (dimension)	Goals (justice) Indicators (dimension)	Goals (justice) Indicators (dimension)
Settlement / Distric	Goals (justice) Indicators (dimension)	Goals (justice) Indicators (dimension)	Goals (justice) Indicators (dimension)
City	Goals (justice) Indicators (dimension)	Goals (justice) Indicators (dimension)	Goals (justice) Indicators (dimension)

4.4 – **A fair city development in Lima.**

Even though justice is a contextual concept, on a basic conceptual level it could be said that a fair city:

- Is produced by dynamics of control and action (investment, regulation, use) that produce equitable outcomes (provision of equitable access to services and goods)
- Is the one in which those dynamics are governed by democratic processes in which all actors, especially those disenfranchised by power structures, have voice in the decisions that produce and develop the city
- Preserves and fosters diversity by acknowledging structural conflicts, counterbalancing relations of oppression and domination and providing common spaces where meeting is possible.

In the following chapters (5, 6 and 7), there will be a more contextual reflection on how these three principles were applied (or not) in the city development of Lima during the 20th and 21st century and what the consequences have been in relation to segregation.

Integration of bodies of knowledge

The former three principles that derive from Fainstein's (2011) principles of equity, democracy and diversity, are developed in detail in the goals defined in chapter 4.2. These are, firstly, connected to indicators (dimensions) and, secondly, sorted according to the variables of time and scale, extracted from Urban Morphology theory (chapter 4.3). A matrix (table 4.5) attempts at summarizing this content and its interrelations and it is developed in order to guide and test the multiscalar analysis and the design of the proposals and strategies,

TABLE 4.5 (next page) Assessment matrix: Social goals related to spatial indicators for spatial justice assessment. Source: Developed by the author, based on Kropf, 2017, Conurb, 2017 and using all references explained throughout this chapter.

TIME	SCALE	GOAL	PRINCIPLE
ORIGINAL ENVIRONMENT	Street / Block	Characterization of the block	-
		Characterization of the block	-
	Settlement	Characterization of the block	-
		Characterization of the block	-
		Characterization of the block	-
		The area had access to basic services for urban living	EQUITY
		The area is safe in terms of risks and hazards (earthquake and flooding)	EQUITY
	City	The area had access to basic services for urban living	EQUITY
		The area is safe in terms of risks and hazards (earthquake and flooding)	EQUITY
DECISION MAKING PROCESS (intention + control)	Street / Block	Productive practices that benefit collectively the members of the community (dinning, meeting, etc.) are considered in the block scale	EQUITY
		Open-ended design allows users to make decisions in the construction process at the block / house scale	DIVERSITY
	Settlement	All actors, in the settlement scale, affected in the urban development process had a voice in the decision-making process	DEMOCRACY
		Decision-making process can adapt and include alternative practices and positive hybridities (Watson, 2006)	DEMOCRACY
		Decision-making process creates knowledge on the different actors	DEMOCRACY
		Open-ended design allows the community to make decisions in the construction process at the settlement scale	DIVERSITY
	City	All actors at the metropolitan scale affected in the urban development process have a voice in the decision making process	DEMOCRACY
		There is not violent eviction or expulsion of people	EQUITY
		Decision-making process provides spaces to develop citizenship to vulnerable population	DEMOCRACY
OUTCOMES (Product of transformation)	Street / Block	Space fosters flexibility of use, including diverse productive activities from formal and informal sector in the block	DIVERSITY
		Regulations foster flexibility of use and productive / economic sector	DIVERSITY
	Settlement	Diverse economic activities are recognised and connected in the settlement	DIVERSITY
		Open-ended physical design allows collaboration between different actors	DEMOCRACY
		Settlement has access to basic services for urban living in the settlement scale	EQUITY
		Open space has potential for integration of different groups (gender, age, origin, socioeconomic group) in the settlement	DIVERSITY
	City	Diverse economic activities are connected to metropolitan centralities	DIVERSITY
		Settlement has access to basic services for urban living in the city scale	EQUITY
		New relations of legitimacy and accountability are created between actors	DEMOCRACY

	INDICATOR	PRODUCT / METHOD
	Origin of the social group	Block profile
	Size of the social group	Block profile
	Initial ownership type of the land	Settlement profile
	Location of geographical borders (and relation with administrative borders)	Settlement profile (map)
	Location of administrative borders (and relation with geographical borders)	Settlement profile (map)
	Accessibility to water, sewage and electricity within the settlement	Map
	Flooding areas within the settlement Steepness of the settlement	Map
	Distance to existing basic services networks	Map
	Flooding areas in the metropolitan scale Steepness on the metropolitan scale Type of soil in the metropolitan scale	Map Map Map
	Flexibility of the block and the plot. Characterization of plot sizes within the block and the settlement. Number and location of social and economic activities (formal and informal)	Axonometric drawing of the block
	Parts of the building (house) or block are planned to be built by the users or the community	Axonometric drawing of the block
	Characterization and weight of the different stakeholders in the process	Power - interest diagram
	Number of potential alternatives of the development process	Timeline
	New expansions of the settlement have incorporated characteristics of former developments	Timeline and settlement map
	Characterization of parts of the settlement are designed/planned to be built by the community	Settlement map
	Characterization and weight of the different stakeholders in the process	Power - interest analysis
	Distance to the place of relocation and activities or events that involve resistance to eviction	# and map
	Type of participation and actors involved in the process	Time-line
	Number and type of productive activities that take place in the house / block	Axonometric drawing of the block
	Comparison between regulation (zoning and land-use) and reality	Axonometric drawing of the block
	Number and type of productive activities in the settlement, density of the settlement Relation between the two and angular integration	Map / PST
	Future expansions bring together the same or different stakeholders	Power - interest diagram of future expansion
	Access to services of water, sewage and electricity	Map
	Integration potential of open space. Distance of high integrated open space with slopes and low areas. Type of activities that take place in the open space.	PST. Map
	Attraction reach to metropolitan centralities	PST. Map
	Access to services of water, sewage and electricity	Map
	Characterization and weight of the different stakeholders in the development process in expansion areas of the settlement	Power - interest of future expansion

5 – How is Lima a segregated city?

Socio-spatial segregation in Lima

In this chapter, the concept of socio-spatial segregation will be discussed and contextualized in the city of Lima, putting forward how the phenomenon has changed through time and the city has gone from a dichotomy 'formal city'-*barriadas* to a gradient of segregation. This will give context to the following chapters of the analysis. *Barriada* is a:

"Piece of land that is publicly, municipally, community or privately owned (...) in which, by squatting and outside legal dispositions on property, with or without municipal consent, on distributed plots without an approved official plan, a group of housing, of any sort of structure, has been constituted, and lacks one or more of the following services: drinking water, sewage, street lights, sidewalks, roads, etc." *Law 13517 on marginal settlements (1961)*

"Community of settlers that (...) has been formed in suburban or peripheral areas and that, with a progressive sense, faces its lack of living conditions looking for its own solutions, that even if they express an exemplary collective vocation, they have deficiencies that must be corrected (...)."
Supreme decree that created SINAMOS (National office for the development of settlements)(1971)

"Settlement in which people accessed, under non-commercial means, non-urbanized land." *Julio Calderon (2016) La ciudad ilegal*

"Organization of citizens without housing who occupy a piece of land and, confronting the State and other sectors of society, work collectively in order to access urbanization and social life requirements."
José Matos Mar (2012) Estado desbordado y sociedad nacional emergente

"Urban settlement characterized by (1) high levels of economic and non-economic poverty and (2) by (partial or total) lack of infrastructure and services." *National Urbanism Department. Ministry of Housing, communications and sanitation. Peru (2012) Situación de los barrios urbanos marginales en el Perú 2012*

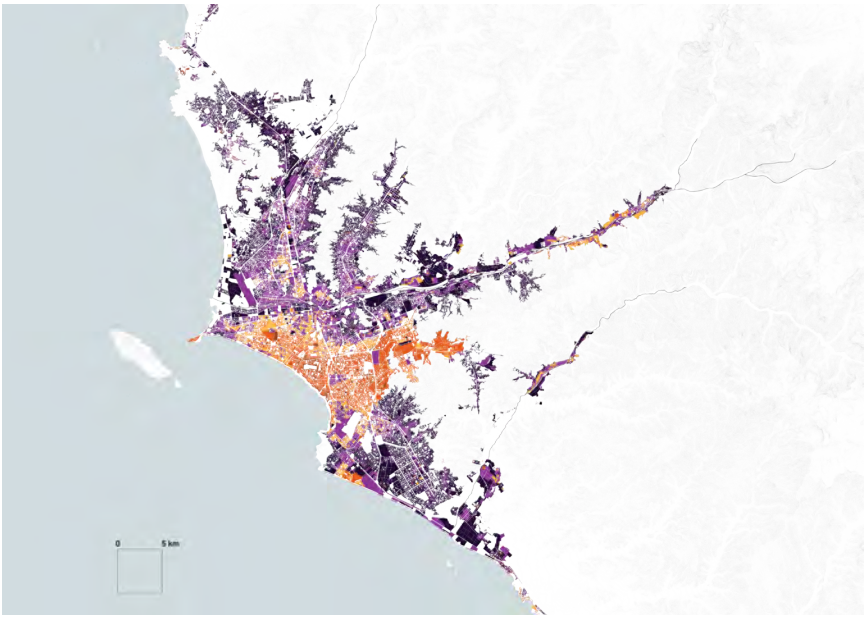
5.1 – **Socio-spatial segregation in Lima**

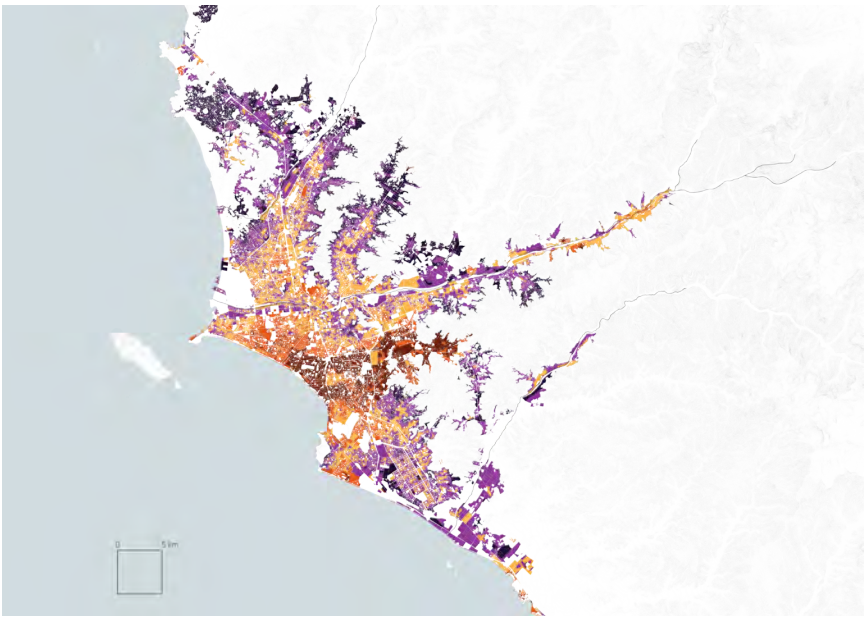
There are many definitions of spatial segregation in literature (Castells, 1977; Denton & Massey, 1988; Sabatini, 2006) that describe it as a phenomenon in which different social groups live or experience the space separately from each other. In their study on poverty and segregation in Metropolitan Lima, Paul Peters and Emily Skop (2004), propose that segregation is influenced by both social processes and the physical environment of the city. This idea is particularly interesting when understanding the relation between segregation, as an expression of injustice, and the process of urban development, a decision-making process with both consequences and causes in the environment. Regarding the development process in the Latin American context, Sabatini (2006) puts forward two types of segregation:

- Voluntary segregation takes place when groups of population (high income, middle class or lower-middle class (Peters & Skop, 2004)) isolate themselves in gated communities or private residential developments in the periphery.
- Forced segregation takes place when groups of population, generally low-income or vulnerable, are forced to live in isolated areas of the city, often the "gaps" left by urban developers or in peripheral low-value land of the city.

Even if segregation has sometimes positive externalities, such as maintaining social cohesion or strengthening social networks (Peach, 1996), in this case both types are related to an unjust process that "promotes exclusion and disadvantages for the ones who already have less" (Fainstein, 2011). Their main outcome is isolation of vulnerable or low-income population in bad quality land and, therefore, lack of opportunities for these groups to overcome poverty or vulnerabilty. Peters and Skop also mention how in the case of Lima "social and economic inequality and highly segregated development patterns have contributed to a socially and culturally fragmented environment" (Peters & Skop, 2004) . Segregation is therefore a phenomenon that can be seen on society and space, thus *socio-spatial segregation*, and one that is experienced through many dimensions (identity, economy, administration, etc). Kathrin Golda-Pongratz (2007), on her description of the changes in the relationship between centre and periphery in Lima, mentions how the city's fragmentation is also fostered by a complete division of the identity and the narratives for the two areas, despite all the existing urban dynamics between them.

In the context of Lima, socio-spatial segregation is also one of the results produced by its urban development process, mainly directed by the ruling groups: land owners and the State (Calderón, 2016; Fernández Cordova & Fernández-Maldonado, 2016; Matos, 2012; Abramo, 2012). This phenomenon is experienced in many ways: specific groups of population do not have access to basic service or public goods while others do (Fig. 5.5 to 5.7), some groups of population do not have a choice and are forced to live in areas exposed to risks (Municipality of Lima, 2014), administrative organization (Fig. 5.4) has been influenced and has fostered at the same time social fragmentation in space, etc. Lima´s fragmented identity, mentioned by Golda-Pongratz (2007), is nevertheless under a process of change. The dichotomy centre-periphery, or formal city-*barriadas* from the past is being replaced by a gradual expression of segregation (Fernandez Maldonado & Fernandez de Cordova, 2016), in which the slopes are the last area of the city, the one, like the *barriada* in the past, that is consciously excluded by many in the imaginary of the city.





Average income by person according to socio-economic classification 2013
(Nuevos Soles / USD)

Low	less than 575.70 / less than 205.61
Middle low	575.70 - 898.99 / 205.61 - 321.06
Middle	899.00 - 1,330.09 / 321.07 - 475.02
Middle high	1,330.10 - 2,192.19 / 475.03 - 782.93
High	more than 2,192.19 / more than 782.93

FIG. 5.1 Average income per person in the beginning of the 21st century. Center-Periphery socio-spatial segregaion patterns. Done by the author with data from PLAM 2035. The original data was collected by INEI in 2007

FIG. 5.2 Average income per person in 2013. Graduated socio-spatial segregation patterns. Developed by the author with data from INEI 2013.

From a centre-periphery dichotomy to a gradient of segregation

A clear socioeconomic division between centre and periphery was fostered until the late 1990s. As mentioned in chapter 2. *Problem Statement*, low income population was directed to sandy non-productive peripheral areas since the 1950s. As a consequence of this separation in space, the average income per family in the 2000s (fig. 5.1) in central areas was significantly higher than in the rest of the city, with few exceptions (La Molina or Chaclacayo in the East, Pantanos de Villa in the South), which are rich enclaves or gated communities in the periphery. Some diversity could also be seen in the North of the city, but in a much smaller scale.

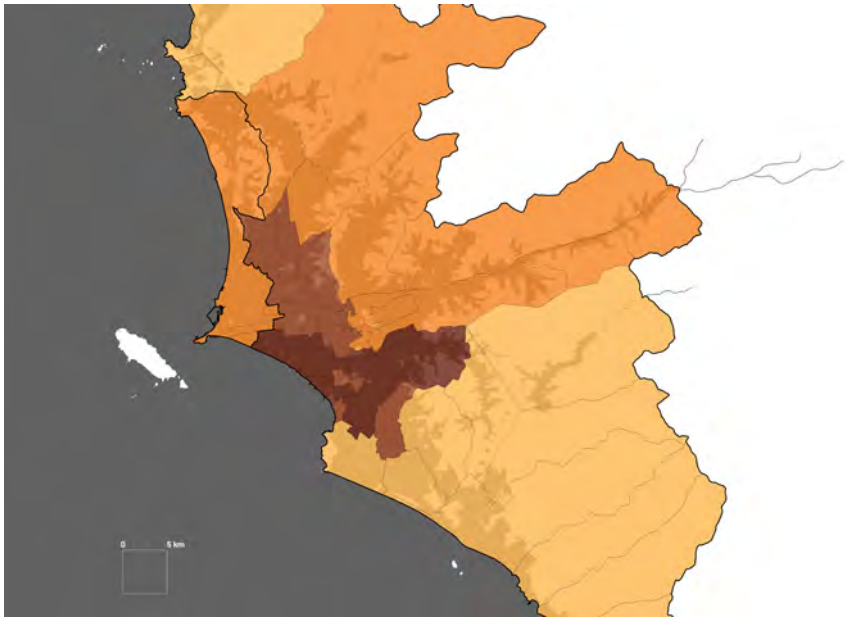
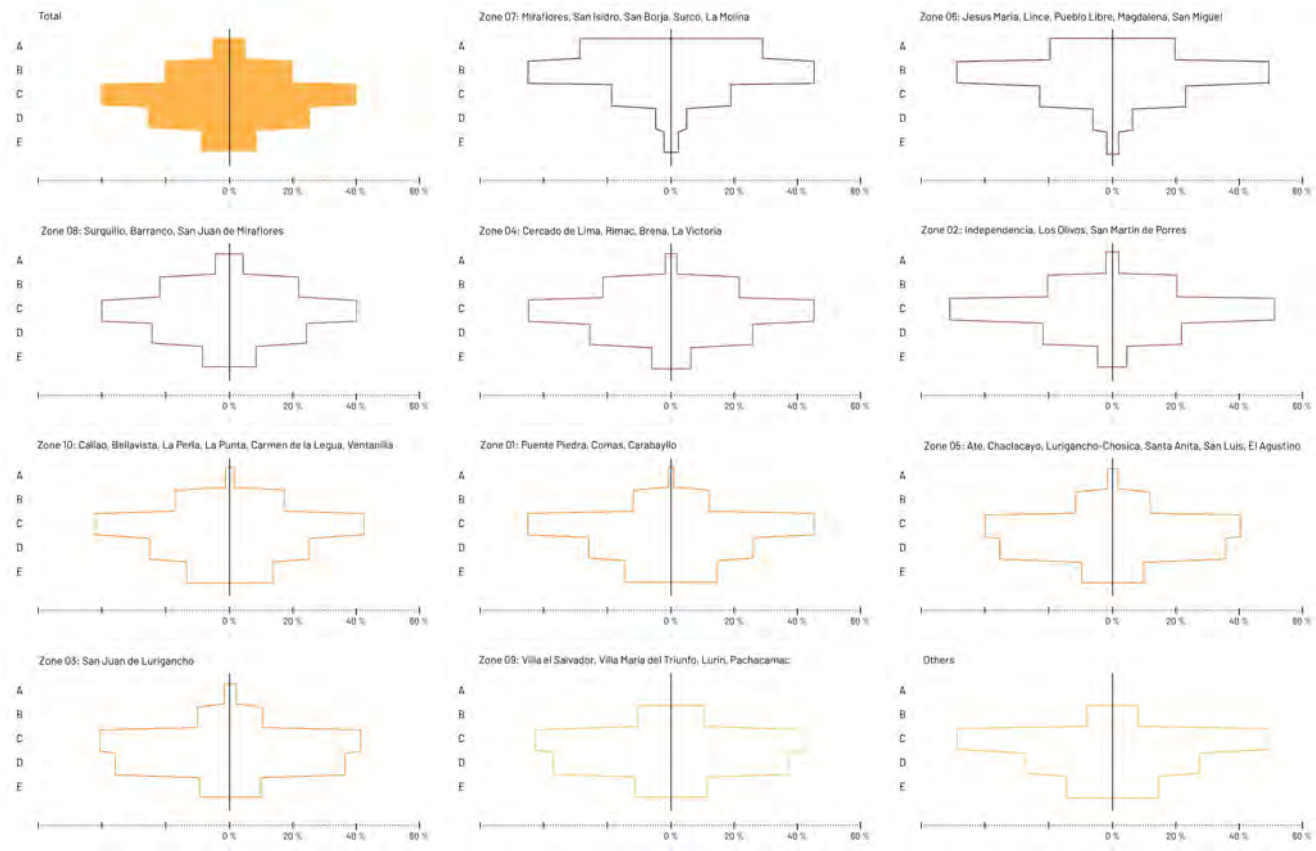


FIG. 5.3 Socioeconomic classification by districts. The definition of the groups is done according to the shape of the socioeconomic distribution (see diagrams below). Map and diagrams drawn by the author. Data from APEIM, 2015.

Socioeconomic classification

- Predominance of sectors D and E
- Predominance of sectors C and D
- Balance between B,C and D
- Predominance of sectors A and B



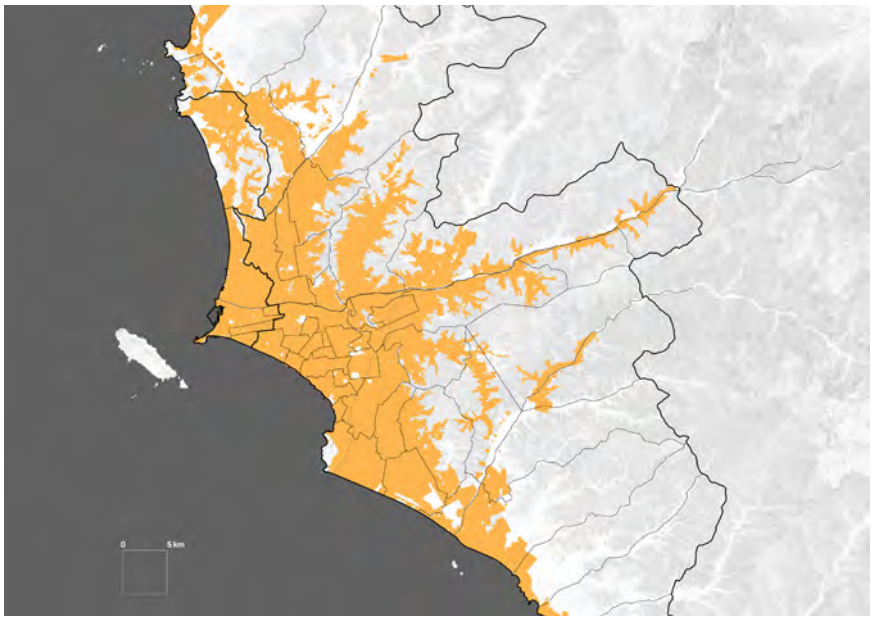


FIG. 5.4 Administrative division in Lima. In darker black the two provinces of Lima and Callao. Done by the author with data from PLAM 2035 (Municipality of Lima, 2014)

Socio-economic classification in Peru

Socioeconomic classification in groups from A (High income) to D (Low Income) is defined by INEI (National Institute of Statistics and Informatic) and includes variables related to education, social status and economic wealth. The classification considers, among other variables, average income per person by household. According to the social stratification developed by INEI in 2013, these values are:

E = less than 575.70 Nuevos Soles (205.61 USD)
D = 575.70 - 898.99 Nuevos Soles (205.61 - 321.06 USD)
C = 899.00 - 1,330.09 Nuevos Soles (321.07 - 475.02 USD)
B= 1,330.10 - 2,192.19 Nuevos Soles (475.03 - 782.93 USD)
A = more than 2,192.19 Nuevos Soles (782.93 USD)

Segregation is increased by administrative fragmentation (fig. 5.4). There are 43 districts in the province of Lima and 7 districts in Callao. Each of them has autonomy over specific matters (open space, local transportation, social organizations, planning, etc,) and manages its own budget that mostly gets from local taxes on property and licences. Therefore, districts with high informal economy and low-income population have usually weaker capacity to improve their situation. There is also a metropolitan municipality of Lima with metropolitan competences and, due to the still high centralization of the country, the State still operates in many issues (provision of services, specific transportation matters, etc.) on the city scale. This makes governance difficult and creates sometimes a blurry view on the specific responsibilities by different administrative bodies. Administrative fragmentation and lack of coordination is also experienced differently according to the local government's capacities, therefore fostering fragmentation and segregation in the city scale.

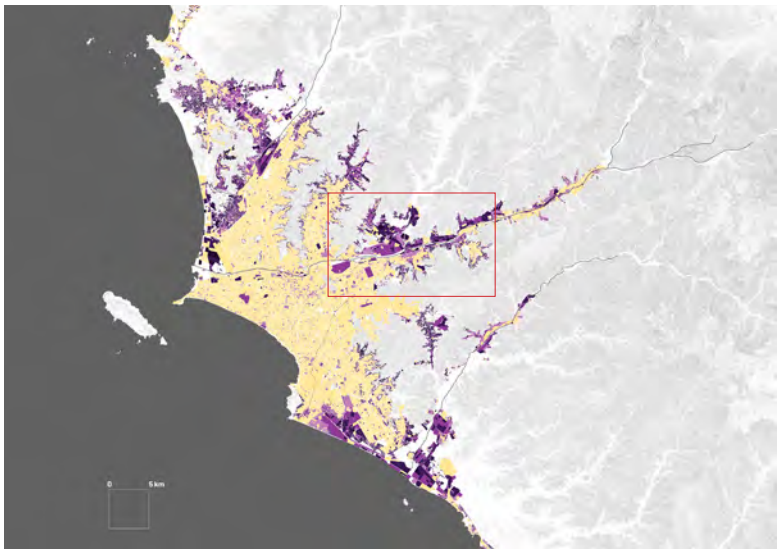
Fernández Cordova and Fernández-Maldonado (2016) have studied recent changes in socio-spatial segregation at the district scale and on census tracts, concluding that "areas of the metropolis considered segregated due to their social homogeneity until late 1990s showed more heterogeneous income and less difference between groups". The authors speak of a diverse gradient from centre to periphery, related also to new urban centralities in the North, East and South of the city. This is also observed on the socioeconomic study developed by Apeim (2015) (Fig. 5.3) and the social stratification map developed by INEI in 2015 (fig. 5.2). While, there are diverse groups living together within the defined areas (fig. 5.3 bottom), the subtle socioeconomic gradient can be seen in the city scale (fig. 5.3 top).

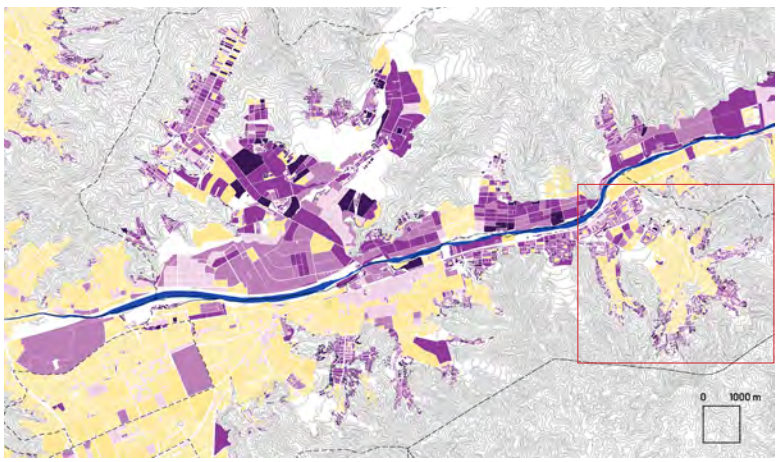
Centre - periphery division is therefore leaving space to more complex dynamics. On the one hand, there is higher diversity in former homogeneous districts (Fernández Cordova & Fernández-Maldonado, 2016). On the other, informal urban developments are found in slope areas of these same districts (Fig. 5.7 and 5.8), reproducing

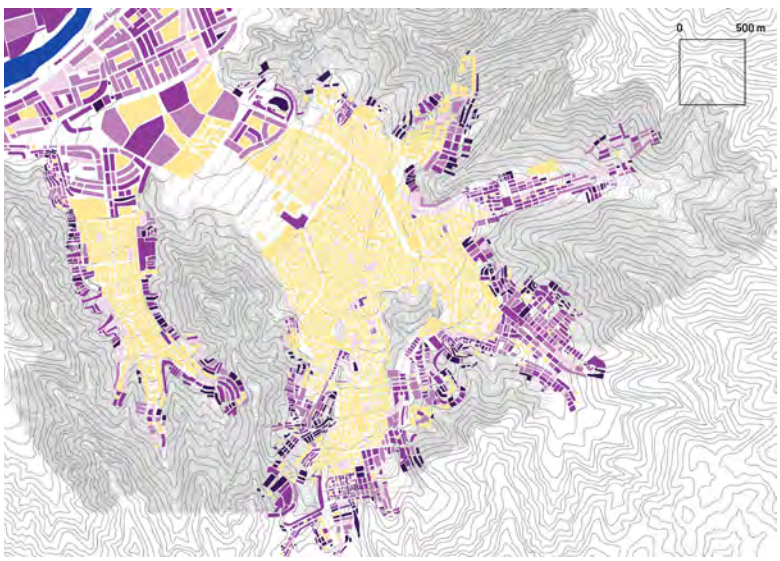
FIG. 5.5 (right) Access to services in the Metropolitan scale. Done by the author with data from PLAM 2035. The original data was collected by INEI in 2007.

FIG. 5.6 Access to services in the East of Lima (districts of Lurigancho, Santa Anita and Ate. Done by the author with data from PLAM 2035. The original data was collected by INEI in 2007.

FIG. 5.7 Access to basic services in Huaycán, Ate, Lima. Done by the author with data from PLAM 2035. The original data was collected by INEI in 2007.







Lack of access to basic services

District borders

Lack of access to power supply, water and sewage

- 80 - 100 %
- 60 - 80 %
- 40 - 60 %
- 20 - 40 %
- 0 - 20 %

FIG. 5.8 Cerro Muleria Hill in Los Olivos district. Picture by the author.

FIG. 5.9 El Ermitaño in Independencia district. Picture by the author

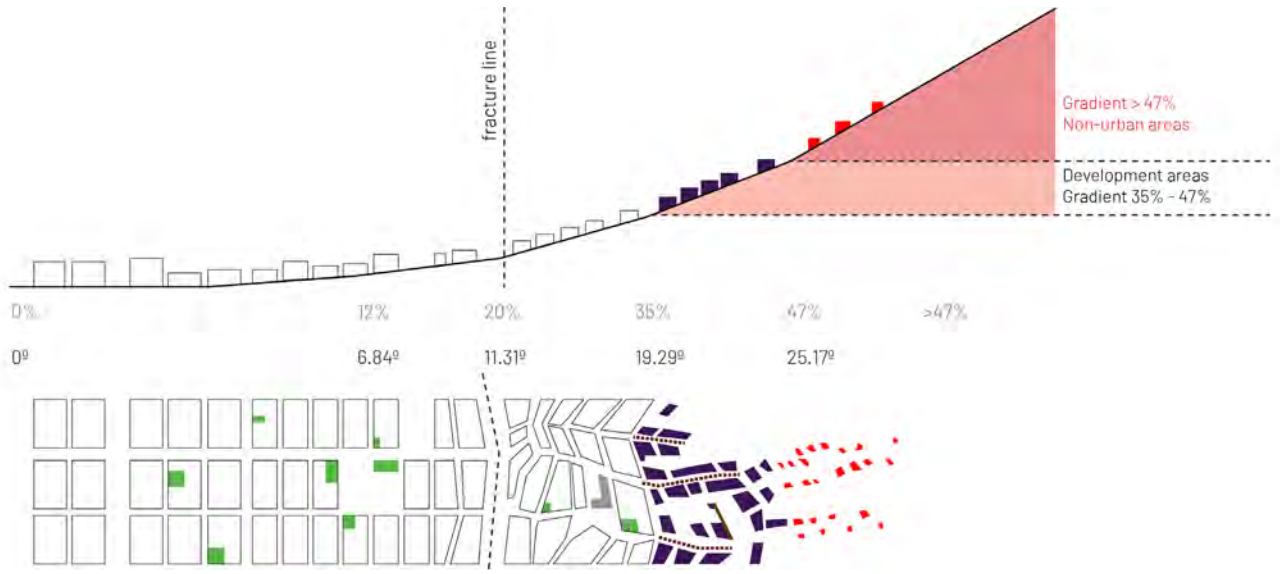
FIG. 5.10 Classification of areas in the slopes. Developed by the author, based on a drawing in "Housing on the slopes" (Lima Municipality, 2013b) and "The city of the slopes" (Conurb, 2016).

segregation internally. Therefore, we may say that spatial segregation is now operating in a smaller scale. Vulnerable population are again left the worst areas to settle down and a new spatial divide between regularized and new non-regularized informal settlements is taking place. In fig. 5.4, 5.5 and 5.6 we see how lack of access to basic services (water, sewage and electricity) is still experienced in specific areas of the city. These areas, still peripheral if seen on the metropolitan scale, show different characteristics if we zoom in: Segregation is sometimes fostered by an administrative (district) and geographical (river) borders (fig. 5.5) or it is defined by the topography of former homogeneous areas of the city.

Since the 90s, there is not much urban soil available close to the city centre. Before then, informal settlements in the periphery had extended until the beginning of the slopes, usually to areas with less than 20% gradient (Lima Municipality, 2013b). There is thus at the end of 20th century settlements, where the foothill of the Andes begin, a virtual fracture line in the topography (Conurb, 2016) that divides former and later settlements (Fig. 5.9).

In the last 20 years, urban growth in Lima has taken place simultaneously by urban densification of formal and regularized areas for high- and middle- income classes and city expansion on the slopes of the periphery for the low-income population, a process of simultaneous compaction-expansion, labelled as *ciudad com-fusa* by Pedro Abramo (2011). The slopes are often the domains of land mafias who operate in tacit or illegal agreements with local governments (Calderón, 2016). The characteristics of these type of urban development and the difficulties to implement basic services of water or sewage, or access, usually promote very harsh living conditions for their inhabitants for prolonged periods of time.

The fracture line segregates former and newer developments, regularized and informal, low-income and middle-low income, with-access or without-access to services. But it is also a clear division between different sets of actors and ways of urban development. In the next chapter we will go deeper into this issue, exploring how spatial and housing policy has changed through time and foster segregation.



6 – How have we reached this point?

Spatial and housing policies in Lima in the 20th century / Spatial and housing policy nowadays

There are several factors that influence socio-spatial segregation in Lima (Peters & Skop, 2004): geographic conditions, economic changes or urban development have had their part in the current situation of Lima. Housing, as the main component of urban development, has nevertheless been one of the main drivers of socio-spatial segregation.

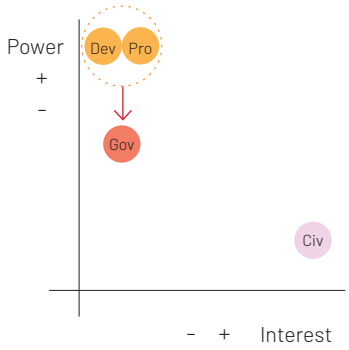
In this chapter, a description of the different approaches to spatial and housing policies during the 20th and 21st century in Lima helps to understand the connection between urban development and the expressions of socio-spatial segregation. The stress is here on housing policies for the low-income or vulnerable population, but a broader political picture helps contextualizing these. In order to connect these events in time and space, a time-line and a map are also included in the following pages. The different types of urban development related to the policies and decision-making processes provide a framework to develop the classification of types of settlements in the next chapter.

6.1 – **Spatial and housing policies in Lima in the 20th century**

FIG. 6.1 Power-interest diagrams for each period, regarding housing developments for low-income population. Developed by the author

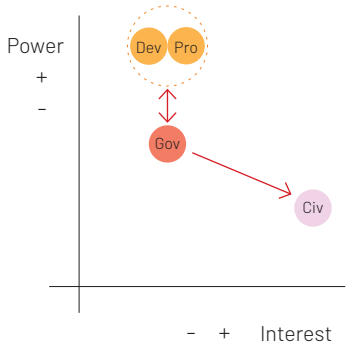
Even though the first informal settlements in Lima took place in the beginning of the 20th century, it is in the 1940s when this phenomenon becomes relevant for the urban development of the city (Matos Mar, 2012).

1940 - 1956 First *barriada* boom and first social housing policies
Bustamante government (1945-48) and Odría dictatorship (1948 -56)



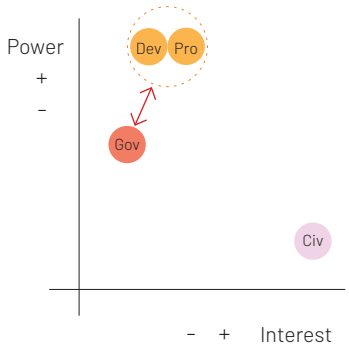
As a response to the arrival of people to Lima and the housing crisis, the official housing policy focused on construction of apartment buildings and Neighbourhood Units (Fig. 6.1 and 6.7-5) under modern architecture and CIAM principles (Calderón, 2016). The public sector was the main social housing developer through the National Housing Corporation (CNV) (1946) and the Urban Planning National Office (ONPU) (1946). The apartments at the Neighborhood Units, built in low-cost land of the periphery in those days and granted under rental schemes, were inaccessible for low-income population (Calderón, 2016). Therefore, big groups of people who arrived at the city ended up living in the first massive land occupations in low-quality land on hills or river banks. These took place in San Cosme (1946) (Fig. 6.7-4), El Agustino (1947) or San Martin de Porres (1949) (Fig. 6.7-2). The official answer to land occupation was often violent eviction performed by the authorities.

1956 - 1963 "Two-face" housing policies
Prado government (1956-1962) and Military government council (1962-63)



People continued coming from the interior of the country to Lima at an increasing pace. A new government, with support of the Interamerican Development Bank and the Interamerican Development Agency, fostered the withdrawal of the State in favour of the private housing market and the informal occupation of land. Subsidies and mutual societies would promote the development of formal housing for the middle class (social or affordable housing were not profitable enough for the private sector), while law 13517 (1961) would grant land tenure to low-income people who had occupied land informally. Land ownership was also used as a way to prevent socialist and communist movements among low-income population (Calderón, 2016). The tacit agreement between land owners, who wanted to speculate with their land, the government and social organizations, pushed the newcomers and people in search of land to vast unproductive areas far in the periphery. San Juan de Dios (Fig. 6.3 and 6.7-6), in the South, or Comas (Fig. 6.7-8), in the North, are examples of this.

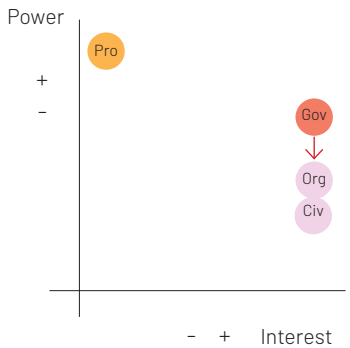
1963 - 1968 Public sector develops and fosters formal housing, leaving informal settlements unattended
Belaúnde government (1963-68)



Former promoters of modernist ideas won the elections in 1963. There was a shift back to a more State-driven housing sector, supported by mutual societies and subsidies. New housing complexes were developed to supply houses for the middle class and high-income population. The informal settlements were not part of the plan, being unofficially allowed to occupy the worst quality sandy land in the city. Towards the end of the 60s, an intellectual movement criticized this attitude and highlighted the value of self-managed and self-built settlements (Mangin & Turner, 1968; Calderón, 2016). PREVI (experimental housing project) competition and project (Fig. 6.2 and 6.7-9) were planned (1968) to develop new prototypes of progressive housing and low rise-high density neighbourhood schemes (Land, 2016). The

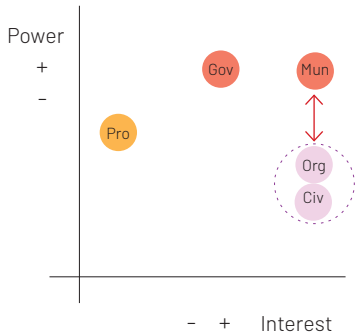
results of the competition, as well as the development of the project were carried out by the following government.

1968 - 1980 Support to informal settlements by public sector and experimental social housing projects
Velasco dictatorship (1968-75) and M. Bermúdez dictatorship (1975-80)



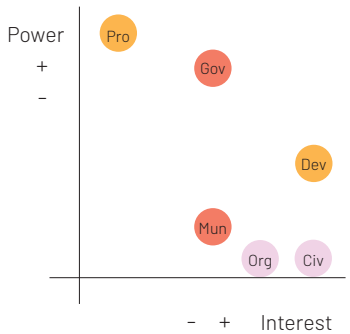
The Revolutionary Military Government launched several policies and instruments to prevent land accumulation. Besides providing big areas of non productive land to the public sector, these policies couldn't stop land speculation in Lima. In 1973, only 15% of Peru's economically active population was able to access a house in the formal market (Calderón, 2016). There were nevertheless important housing experiments, such as PREVI (launched by the previous government), the self-managed community of Villa el Salvador (CUAVES) (1971) (Fig. 5.4 and 5.7-10) or Próceres, which tried to provide alternative examples for affordable urbanization and housing for low-income population in informal settlements. PREVI was a success in terms of design exploration but, even if it had an impact on later projects such as Próceres, the implementation of the ideas of the competition had little impact in the overall urban development of Lima. On the contrary, Villa el Salvador, which was built on empty sandy land in the South of Lima, had already 109,105 inhabitants two years after the first people arrived (Matos Mar, 2012).

1980 - 1990 Second *barriada* boom. State as developer of plot & services projects and housing complexes. Experimental urban projects by Municipalities
Belaúnde government (1980-85) and García government (1985 - 1990)



The internal armed conflict (1980-2000) forced thousands of people to flee from the interior of the country to the big cities. Lima's population grew 170,000 new inhabitants per year between 1985 and 1995 (Matos Mar, 2012). Many of this people arrived to Lima's *barriadas*. This situation, along with the fragmentation of land tenure produced by the Agrarian Land Reform (1969) in rural communities close to the city, led to an increasing informal land market (Calderón, 2016). Informal settlements were for the first time responsibility of Municipal governments. Experimental housing projects were developed in the outskirts of Lima for low-income population (Huaycán (Fig. 6.5 and 6.7-11), Laderas del Chillón), but they didn't have either support from the national government nor later continuation. The central government continued to develop middle class housing through ENACE (National Building Company) and fostered loan schemes, including self-building credit for low-income population.

1990 - 2000 Formalization of informal land and withdrawal of the public sector
Fujimori government (1990 - 92) and Fujimori dictatorship (1992-2000)



The housing market was completely liberalized and deregulated during the 90s. Municipalities lost competences again in favour of centralization and affordable housing projects disappeared. The few existing policies, funding systems and tools that tried to deal with speculation and segregation were dismantled and replaced by land formalization programs, under the influence of Hernando de Soto's ideas and the World Bank (Maldonado, 2015). The right to housing was removed in the new constitution of 1993, which is the current constitution of Peru. During this period, there were 800 new informal settlements in Lima that hosted more than 400,000 inhabitants (Golda-Pongratz, 2007), many of them built on the slopes of the periphery. During this period urban development in the fringes of the city started to be performed by land traffickers and mafias.

1930

1933 Leticia settlement in San Cristobal hill
Sanchez Cerro government (1931-1933)

FIG. 6.2 UV3 Housing Unit (project). Source: Belaúnde, Pedro; Ruiz, Manuel; Seminario, Patricia (2004) "Estudio de los conjuntos habitacionales en Lima (1949-1989)". From: DAU - Documentos de arquitectura y urbanismo Nº 5, p. 116. Febrero 2004. Seen at http://divagarquitectura.blogspot.com/2012/04/unidad-vecinal-n-3.html (March, 2019)

1940

680,173 inhabitants

1940 - 1956 First *Barriada* boom and first social housing policies
Bustamante government (1945-48) and Odría dictatorship (1948 -56)

1949 UV3 Housing Unit
Odría dictatorship (1948-1956)
planned during previous government

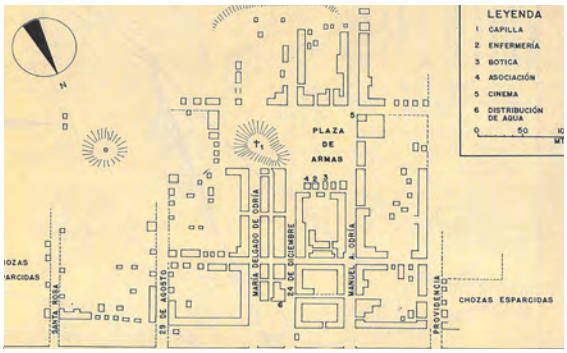


FIG. 6.3 Plan developed for the occupation of Ciudad de Dios settlement. Source: Matos Mar, Jose (2011) "Peru. Estado desbordado y sociedad nacional emergente". Lima, edited by URP.

1950

1955 Ciudad de Dios settlement
Odría dictatorship (1948-1956)

1956 - 1963 *Two face* housing policies
Prado government (1956-1962) and Military government council (1962-63)

1960

1961 Marginal settlements Law 13517
Prado Government (1956-1962)

1,752,277 inhabitants

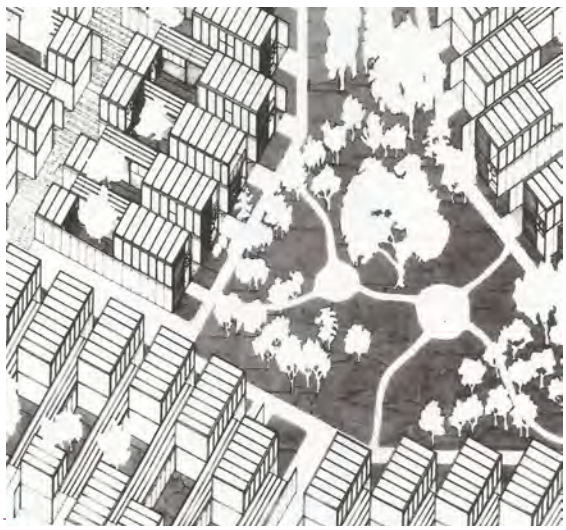


FIG. 6.4 Kikutake neighborhood design proposal for PREVI competition. Source: Land, Peter (2016) "The Experimental Housing Project (PREVI), Lima: Design and Technology in a New Neighborhood" published by Universidad de los Andes

1963 - 1968 Public sector develops and fosters formal housing, leaving informal settlements unattended
Belaúnde government (1963-68)

1970

1969 International Competition PREVI
Velasco dictatorship (1969-1975)
(planned during previous government)

1970

3,241,051 inhabitants

1968 - 1980 Support to informal settlements by public sector and experimental social housing projects
Velasco dictatorship (1968-75) and *M. Bermúdez dictatorship (1975-80)*

1971 Self-managed community of Villa el Salvador
Velasco Dictatorship (1968-75)

FIG. 6.5 Urban structure design for Villa el Salvador. Source: Romero Sotelo, Miguel (1988) "Diseño urbano y organización popular de Villa el Salvador" seen at: http://www.miguelromerosotelo.com/pdf/05_01Diseno_urbano_organizacion_popular_Villa_salvador.pdf (March, 2019)

1980

4,542,911 inhabitants

1980 - 1990 Second *Barriada* boom. State as developer of plot & services projects and housing complexes. Experimental urban projects by Municipalities
Belaúnde government (1980-85) and García government (1985-90)

1985 Urban self-managed community of Huaycán (1984)
Barrantes Municipality (1980-84)

FIG. 6.6 Drawing of the core public space of a UCV (communal housing unit) in Huaycán project. Drawing by Eliseo Guzmán. Source: Personal file of Eduardo Figari.

1990

6,178,820 inhabitants

1993 New Constitution (right to housing is removed)
Fujimori Dictatorship (1992 - 2000)

1990 - 2000 Formalization of informal land property and withdrawal of public sector
Fujimori government (1990 - 92) and Fujimori dictatorship (1992-2000)

2000

2002 Mi Vivienda program is reformulated
Toledo government (2001 - 06)

8,216,143 inhabitants

2000 - 2018 ABC model: Savings+Subsidies+Loans (*Ahorro+Bono+Crédito*)
Paniagua (2000-01), Toledo (2001-06), García (2006-11), Humala (2011-16), Kuczynski (2016-18), Vizcarra (2018) governments

2010

9,324,796 inhabitants

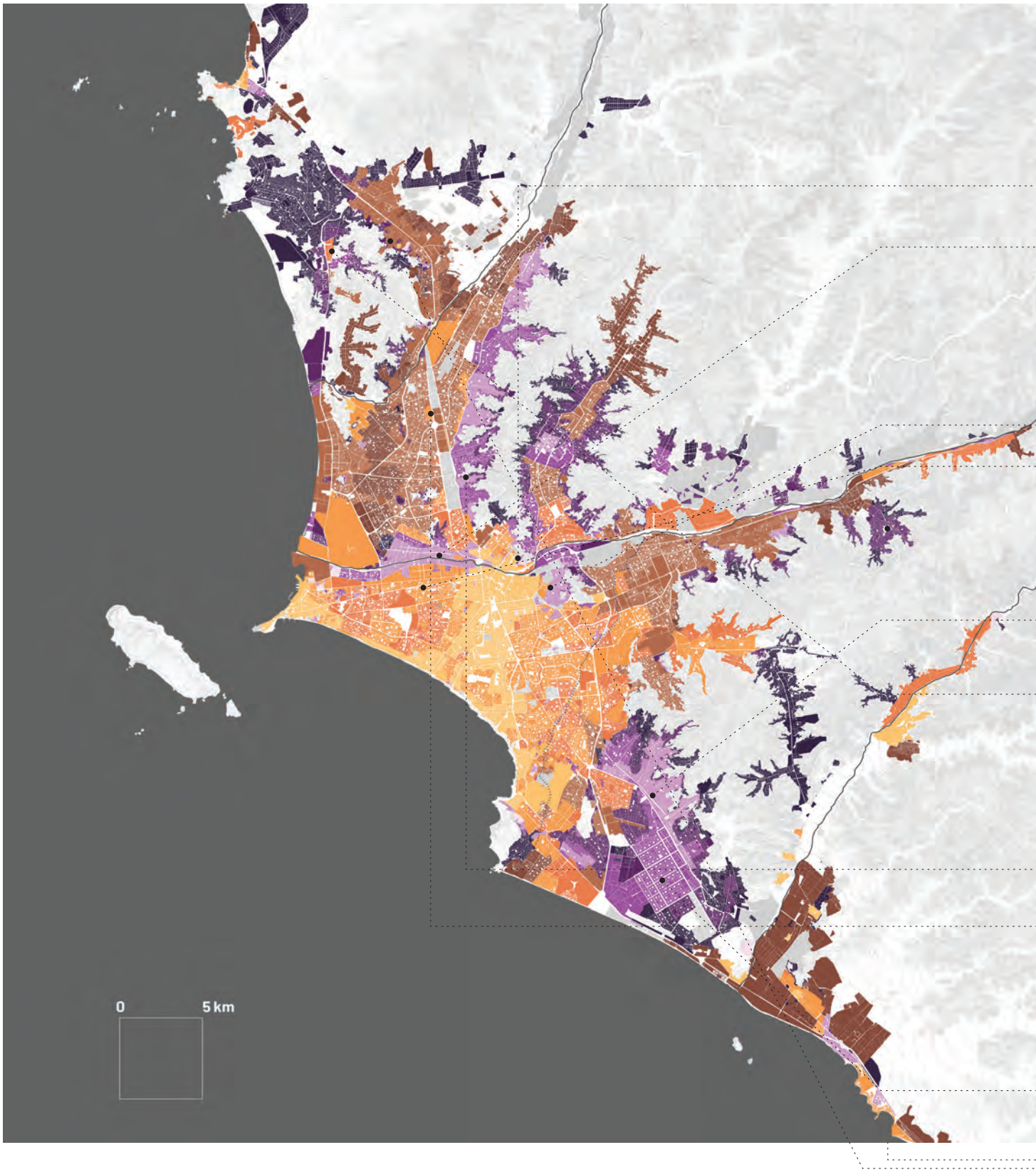

0
5 km

FIG. 6.7 Map: Origin of urban developments in Lima. Developed by the author with data from PLAM 2035 (Municipality of Lima, 2014)

FIG. 6.8 Sequence of images (from left to right and top to bottom): (1) Cerro San Cristóbal in 1955 (2 and 3) San Martin de Porres in 1985 Source: Matos Mar, José (2012). *Perú, Estado Desbordado y Sociedad Nacional Emergente.* Universidad Ricardo Palma (4) Unidad Vecinal 3 (1946-1949), Lima 1955. Source: © CNV (5) San Cosme in 1954. Source: Matos Mar, José (2012). *Perú, Estado Desbordado y Sociedad Nacional Emergente.* Universidad Ricardo Palma (6) Ciudad de Dios in 1955. Source: Matos Mar, José (2012). *Perú, Estado Desbordado y Sociedad Nacional Emergente.* Universidad Ricardo Palma (7) Satellite town in Ventanilla in 1960. Source: Municipalidad de Ventanilla. Seen on https://www.muniventanilla.gob.pe/galeria_satelite/galeria.php (January, 2019) (8) Comas and El Ermitaño in 1962. Picture by John Turner (9) PREVI in 1968 Source: Land, Peter (2015) *The Experimental Housing Project (PREVI), Lima: Design and Technology in a New Neighborhood* (10) Villa el Salvador in 1985. Source: Matos Mar, José (2012). *Perú, Estado Desbordado y Sociedad Nacional Emergente.* Universidad Ricardo Palma (11) Huaycan in 1984. Source: Personal file of Eduardo Figari (12) Los Jardines de Ventanilla (Techo Propio II). Source: published by alsir1982 on youtube on the 12th of June, 2011. Seen on: https://www.youtube.com/watch?v=94fNALH-kG4 (January, 2019)

6.2 – **Spatial and housing policy nowadays**

After democratic restoration in Peru, the roles in housing development remained the same. The State continued to have an indirect role as 'enabler' (UN-Habitat, 2015), while the private sector was the one in charge of providing dwellings to the housing demand, including affordable housing, which worked under a subsidy system. This approach, which considers housing as a commodity, is common to many other countries in Latin America and the world (UN-Habitat, 2015). In Peru, it was implemented through policies by the central government and have had continuity in all governments since the 2000s. Despite their goals, so far, these policies haven't been able to provide affordable residence to low-income population, who access housing through the informal market and land traffickers (Calderon, 2013).

Social housing policies are currently based on a subsidized system and their success is based on a quantitative basis. There are three main types of subsidies (Ministry of Housing online resources, 2016):

- "Fondo Mi Vivienda": Subsidies to access a mortgage, usually used to buy an apartment in a residential building (Fig. 6.8-1). 63,657 loans granted from 2000 to 2016 in Lima.
- "Techo propio": Subsidies to buy or build a basic housing unit on an independent plot (Fig. 6.7-12 and 6.8-2). 28,631 subsidies granted from 2004 to 2016 in Lima.
- "Bono de reforzamiento Estructural": Subsidies for structural reinforcement of single houses on regularized land in risk areas (Fig. 6.8-3). There were 1,566 subsidies granted from 2014 (date of creation) to 2016 in Lima.

The Ministry of Housing and Infrastructure is also developing a new type of subsidy that would benefit people who rent an apartment[1]. There is as well a new group of urban researchers (García Cristóbal, n.d.) who are working to understand if there is a change of social mentality in tenure from individual ownership to other forms of property.

On the other side of the scales, it is estimated that in 2013 there were at least 250,066 dwellings under qualitative deficit[2] (INEI, 2007) in Lima (98% of them located on land on the slopes) and at least 195,756 dwellings (quantitative deficit[3]) that were needed in Lima (Municipality of Lima, 2014). The housing market on the same year of the calculation, provided 20,291 houses (CAPECO, 2013), including the ones subsidized. Housing deficit for low and very low income population sectors in 2013 was around 100 thousand dwellings (Municipality of Lima, 2014). Only 1,735 houses that met the economic conditions of this population were formally built. This doesn't mean that all these people don't have a place to live. Most of this population access housing through informal land traffickers and self-construction (Calderón, 2013). In these cases, policies aim at the regularization of land tenure. 843,672 property rights

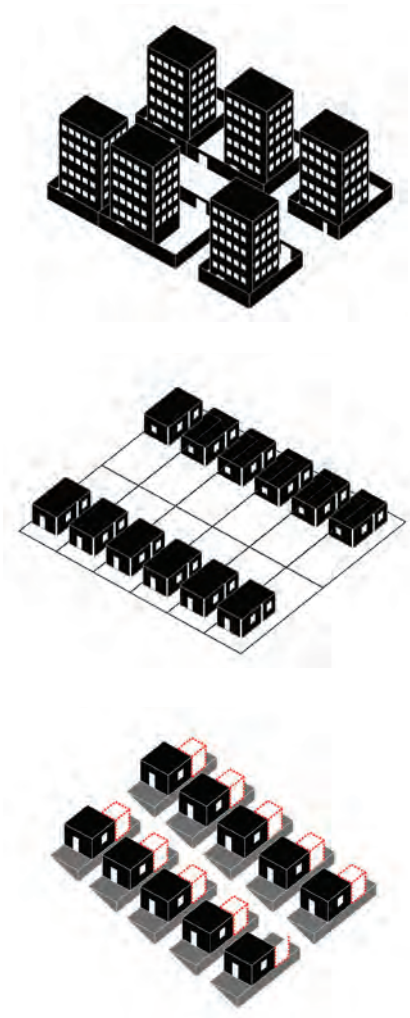


FIG. 6.9 Housing policies focus on the house, the plot or the building, but never in the urban result of the policy. (Left to right): (1) Subsidies to structural reinforcement (Bono de reforzamiento estructural), (2) Subsidies to buy or build a basic housing unit (Bono Techo Propio), (3) Subsidies to access a mortgage (Nuevo crédito Mi Vivienda). Source: Developed by the author

1 https://gestion.pe/tu-dinero/inmobiliarias/bono-mi-alquiler-beneficiaria-10-000-familias-primer-ano-242454

2 Qualitative deficit is defined under three premises: precarious quality of construction, housing overcrowding and lack of water and sewage infrastructure (INEI, 2007)

3 Quantitative deficit is defined as number of households minus amount of dwellings

FIG. 6.10 Settlements and street drawn with chalk on the slopes of Pérez de Cuéllar, San Juan de Lurigancho (2014). Photo taken by the Carolina Huamán. Source: BarrioMio PUI Mariscal Cáceres (Municipality of Lima, 2014)

over informally occupied land were granted from 1996 until 2018 in Lima (COFOPRI online resources, 2018).

Lack of planning, central implementation and the quantitative approach of housing policies, often detach housing policies from city development. All these policies focus on the plot, the house or the building as an independent object within the city, and are not articulated with urban policies, services or plans. Moreover, Lima has never had a tradition in successful planning. There have been several metropolitan plans during the 20th century (1949, 1967, 1990). All of which used zoning tools and specific proposals as their main approach. Due to the very fast development of the city, these documents were more of an update of the land use of Lima than a planning exercise (del Castillo, 2014). In Peru, as in many Latin American countries, planning is often understood as a way to control the present rather than to imagine the future. In 2013 and 2014 the Municipality of Lima worked on a new metropolitan plan for 2035, which had also a very strong focus on specific projects. It was never approved, being the current official document 1990's metropolitan plan.

All these policies and interconnected decisions determine the way low-income population access dwelling or a place to live in the city nowadays. When seeing all regulations and policies put in place, it seems that the main option left to vulnerable population to access affordable dwelling depends on land-traffickers to access land and self-build a house on the slopes. Thus, the development process keeps fostering segregation. But, despite these wicked efforts from the public sector that maintain socio-spatial segregation, it is interesting to note how other trends take place as well, such as renting an informal room or apartment within regularized flat areas (García Cristóbal, n.d.). Informal renting usually derives from subdivision and/or extension of the residential unit, fostering compaction of the settlement and often precariousness (Abramo, 2012), but at the same time mixing in place middle-low and low- income population. Even though there is not much data available of this phenomenon, it will be taken into account both in the multiscalar analysis and the design explorations of this graduation project.

7 – Classification of settlements

A basic framework for the multiscalar analysis

In this chapter, a classification of settlements is proposed in order to select settlements for the multi-scalar analysis. This classification is based on other classifications performed previously by other researchers and institutions, on the previous analyses of the urban development in Lima in this graduation project and on some of the constraints that produce segregation, such as topography or land ownership. The classification does not intend to categorize and understand all the different urban developments in Lima. Its goal is to give a basic framework to understand the selection method for the cases in the multi-scalar analysis.

7.1 – **Classification of settlements**

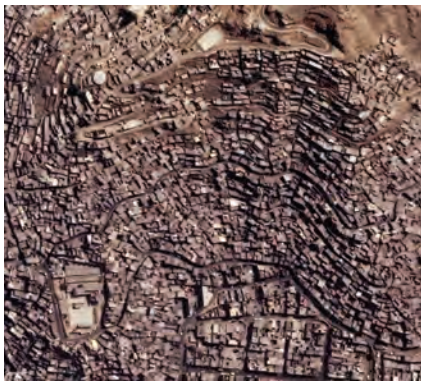
The main goal of this classification of settlements is to define a framework to select different cases for the multi-scalar analysis in which urban development has been carried out in an alternative way; urban developments with some degree of active participation of the civil society, and whose main purpose was providing a place to live to low income and vulnerable population. It is not the intention of this graduation project to create a comprehensive classification of all urban areas of Lima.

There have been many authors who have developed classifications of informal settlements in Lima (Ludeña. 2006). Types have been defined from variables such as physical condition, morphology, land use, land tenure, topography or historical process, among others. Many of these variables are involved in the process of urban development. Topography could act as a border that is only trespassed when flat areas are exhausted or when proximity benefits are higher than the expected cost of precarious living on a slope without services, land tenure is influenced by different regulations and land-regularization policies put in place through time, morphology, as seen in chapters 3 and 4, is both affected and affects the decisions made during the development process, etc.

In Ludeña´s (2004) detailed research on the history of urbanism of Lima, the author divides urban developments according to their origin. He defines three main categories: (1) areas developed by the State, (2) areas developed by the private sector and (3) areas developed to some extent by neighbour organizations. Many of the latter are classified as informally developed by the local authorities (Lima Municipality, 2014), but were actually developed on public land, and in many cases, developed with some degree of collaboration between the State and the civil society. Regarding their morphology these were often similar to private developments next to them, but the configuration of stakeholders on the development process was different. While on private land, owners were often the developers and would subdivide land and usually pay for the implementation of basic services before selling the plots, on public land, neighbours were often vulnerable population, pushed away to peripheral public land and would occupy land subdivided by the government without any provision of services (see chapters 2 and 6). This graduation project will draw from the third type defined by Ludeña (2004), making a sub-classification according to the settlements´ morphology and their stakeholder configuration (see chapter 5). The intention of this is to extract knowledge from processes in which vulnerable population took part to some extent and alternative or influential developments were carried out.

Despite urban segregation and the existence of clear borders, such as topography, settlement types are often not isolated units in the urban fabric. Different types are present within the borders of big areas or the influence from specific stakeholders or historical events produced hybrid types . For example, the urban development of Huaycán, carried out by the Municipality in 1984, defined the social and physical structure of the flat areas, while the slopes are currently under development by land traffickers or social leaders, often under tacit agreements with the local Municipality. The latter, even though are considered a different type according to their physical structure and the actors involved, are located within the same valley and have features, such as the social configuration, that derive from the former.

FIG. 7.1 (Next page)(1) Satellite image of El Agustino, 2014.Type 1. Organic settlements. (2) Satellite image of La Libertad (Comas), 2015. Type 2. Massive land occupations, (3) Satellite image of Villa el Salvador, 2012. Type 3. Self-organized communities, (4) Satellite image of Valle Amauta (Ate). Type 4. Recent settlements on slopes. Source: Google Earth (seen on March, 2019)



Type 1: Organic settlements

These type of settlements usually took place during the 1940s, while the first big migrations from the interior of the country arrived to Lima. Bad quality land on the river bank or hills was squatted. Houses were usually built under no general settlement structure, but adapting their position to the slopes of San Cristobal, San Cosme, El Pino or El Agustino hills, thus creating organic looking settlements (Fig. 6.1-1). In flat areas, like those close to the river (San Martin de Porres), settlements were more regular. These settlements were often located on private land (Calderón, 2016), and population often faced eviction and violence from the authorities. Social organization was the means to resist and achieve their place in the city (Matos Mar, 2012).

Type 2: Grid patterns

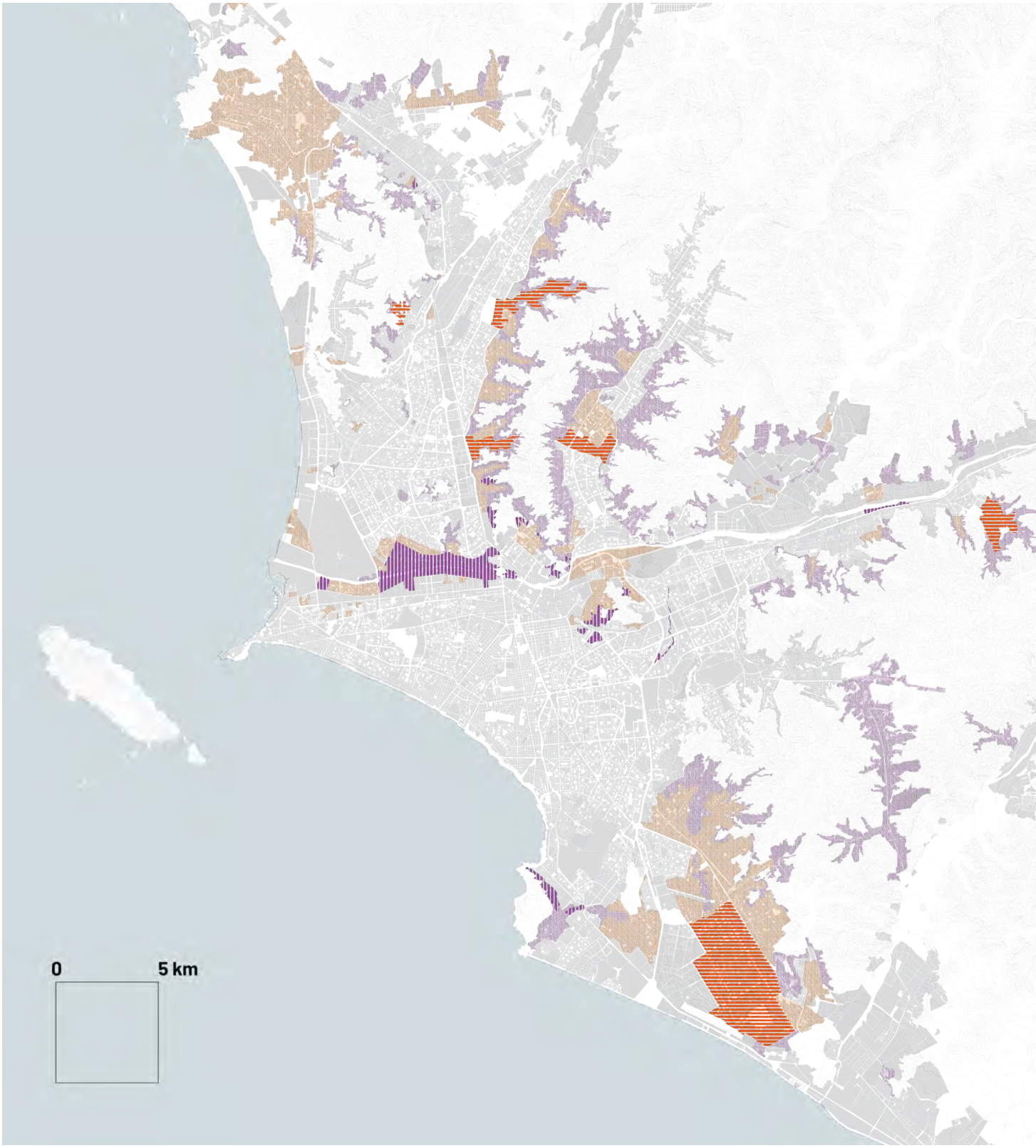
These took place during the 1950s and 1960s in a more liberal political context. After the experiences in the 1940s, social organization was institutionalized and the representatives of big groups of population would negotiate with land owners and authorities in their effort to have a place to live in the city. They were official or unofficially allowed to squat flat unproductive land in the periphery. Big schemes of grid settlements were developed in order to accommodate big population groups. These schemes, as well as technical support to complete the construction of services and housing, were often developed with the State's support (Calderón, 2016: 172). In other cases, universities or topographers hired by the same social organizations worked on the definition of streets and empty spaces for public facilities or open space.

Type 3: Communal urban units

Even though there were few examples, self-organized communities were a very interesting experience carried out with the State support during the 1970s and 1980s. Villa el Salvador (1971), in the South of Lima, Huaycán (1984), in the East or Laderas del Chillón (1984) in the North, are some examples. There was a direct connection between urban structure and social structure. Neighbourhood units or communal units would define space and organization. A defined number of families (60 families in Huaycán, 120 in Villa el Salvador) would share and manage a common space and, at the same time, would constitute the basic cell of the social organization group. This would have representatives on the neighbourhood unit level, on the area or zone (constituted by a specific number of units) and the community as a whole.

Type 4: Hybrid settlements on slopes

Since the 1990s, many urban developments have been carried out on the slopes of the city, usually, but not exclusively, close to regularized informal settlements. Differently to land squatting in previous decades, the land in these cases is usually purchased to land traffickers or to social leaders, who seek profit from the plotting and selling of land on "settlement expansions". These types of settlements are located on the periphery of the city. Developers often try to adapt a grid structure to the steep topography (on gradients above 20%), which derives in "grill"patterns (Fortunic, 1989) that cling on a core structure that follows the valleys deepest line.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5 km

FIG. 7.2 Location of the defined types of settlement in Lima. Developed by the author. Background data from PLAM 2035 (Municipality of Lima, 2014).

An extrapolation of all four types of settlements in the metropolitan context of Lima is carried out. The areas considered for this extrapolation are the ones defined as informal developments by the Municipality of Lima (MML, 2014) (see fig. 2.6 and 2.7). As it was said before, these are not the only developments in which informality played a role, but they are usually the ones carried out on public land or, following Calderón's (2016) definition, those in which people accessed non-urbanized land by non-commercial means. The rest of the city (in grey in fig. 7.2) are areas developed in a different way (privately developed or public housing projects, mainly). The variables used to define the borders of each settlement are its date of development, topography and morphology. For the latter, a basic observation on block and street structure based on previous experience is used.

The results of this work are rough and are presented as a first spatial categorisation. Their main purpose is to provide a classification for comparison of types in the multiscalar analysis. The metropolitan scale will be used to understand the relation between settlement types and the city structure. If the work is to be done more accurately, a more detailed definition of the borders of each settlement, as well as precise calculations on the slope gradient and block and plot parameters, should be performed in order to compare types using GIS data and models. Nevertheless, the time for this graduation thesis is limited and it is not its objective to create a new classification of types for the whole city of Lima. There are nevertheless some reflections on the metropolitan scale that are worth sharing:

- Historical classification of settlements needs to be complemented with morphological variables. Similar patterns are seen in different moments of history. Informal developments were often a process of trial and error and there were many simultaneous processes. Knowledge was transferred and tested at different speeds and locations.
- Even though a settlement type started under certain political or social circumstances that defined its spatial structure or location, some of its characteristics were often transferred to other locations, creating hybrid types. For example, massive settlements were developed in the 1950s and 1960s on unproductive, flat and empty land of the periphery, using grid patterns. These grid patterns were used in a similar manner in the following years on small slopes and gaps left by formal developments, thus adapting the grid and creating sub-types or hybrid-types of the grid pattern.
- Informal developments often filled in the gaps left by formal settlements. These were usually next to the rivers, on small hills, or in former extractive areas (like the clay areas in Huachipa and Cajamarquilla). The patterns used to fill in these gaps adapted their structure to the needs of each case.
- Gaps next to rivers were often developed organically, following models that were more typical of the 1930s and 1940s, during the squatting of the hills.
- There is a big difference on the slope urban settlements developed in the 1930s and 1940s and the ones developed after the massive occupations of land were carried out. The latter follow a basic structure that grants direct access to steep areas, and considers space provision for future open space and public facilities.
- Big geographic areas (e.g. a valley) could host different settlement types, performed in different historical moments or on areas with different slope gradients.

PART 3

Multiscalar analysis

El Ermitaño 1962 / Huaycán 1984 / Valle Amauta 1991 / Ordinary Lima 2019

"Urbanization is the result of millions of design decisions taken by a wide spectrum of stakeholders seeking to solve immediate problems or exploit income-generating opportunities (Evans, 2005). Individuals, companies, and institutions interact within the physiography of the environment to address problems or seize opportunities. (...) The morphology of the city is in turn shaped by these decisions and lends itself to certain representations."

Shelagh McCartney and Sukanya Krishnamurthy (2018) "Neglected? Strengthening the Morphological Study of Informal Settlements"

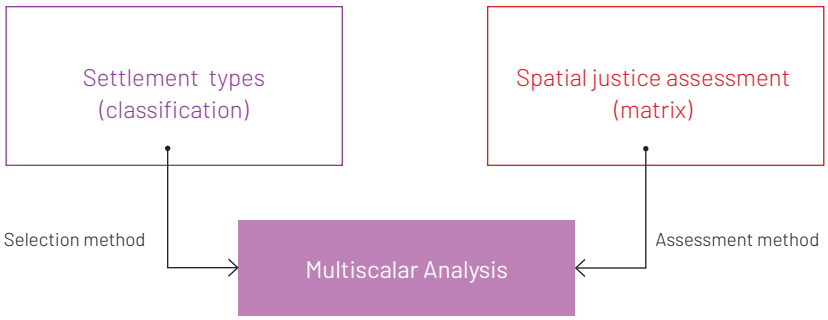


FIG. 7.3 Diagram on the information used for the multiscalar analysis. Done by the author..

In this part of the report, a multiscalar analysis is performed on three different settlements in Lima. The classification of settlements and the spatial justice assessment matrix, developed in part II, are the starting point for the analyses performed in this part.

The selection of cases is based on the classification proposed in chapter 7. They are: El Ermitaño (type 2), Huaycán (type 3) and Valle Amauta (type 4)[1]. The cases are also from different periods of the history of urban development of Lima (see chapter 5): El Ermitaño (1962), Huaycán (1984) and Valle Amauta (1991). They all had different configurations of stakeholders and morphological characteristics in their specific developments. El Ermitaño is one of the first massive land occupations that took place on the light slopes of unproductive public land in the 1950s and 60s. The government tolerated occupation of public land and favoured the interests of private land owners to secure their property (see chapter 4). Huaycán was a planned occupation and a political project by the Municipality of Lima and other stakeholders in 1984, one of the few examples of a decentralized intervention in Lima in terms of housing and urban development. It took place in the outskirts of the city at that time, on unproductive private land, close to flood-prone areas and steep slopes. Most of Valle Amauta´s urban development, but also the last urban expansions of Huaycán, took place in the 1990s on steep land of the periphery of Lima. It happened in a moment in which neoliberal policies had wiped out many of the few existing urban tools and regulations on housing, and shifted the focus on land tenure formalization. The withdrawal of the State allowed for a different configuration of stakeholders to step in and manage the development of the slopes.

The spatial justice assessment matrix defines the indicators, scales and characteristics of the analysis. The settlements are analysed in time (the characteristics of the original location, the decisions made in the urban

1 No settlement from type 1 is selected. This sort of development took part mainly in areas close to the center of the city and both the configuration of stakeholders and the morphology of the settlements were not so often reproduced afterwards, whereas the other three types were. The limited time of this graduation project doesn't allow to develop all types in detail, but this work could indeed be part of further research.

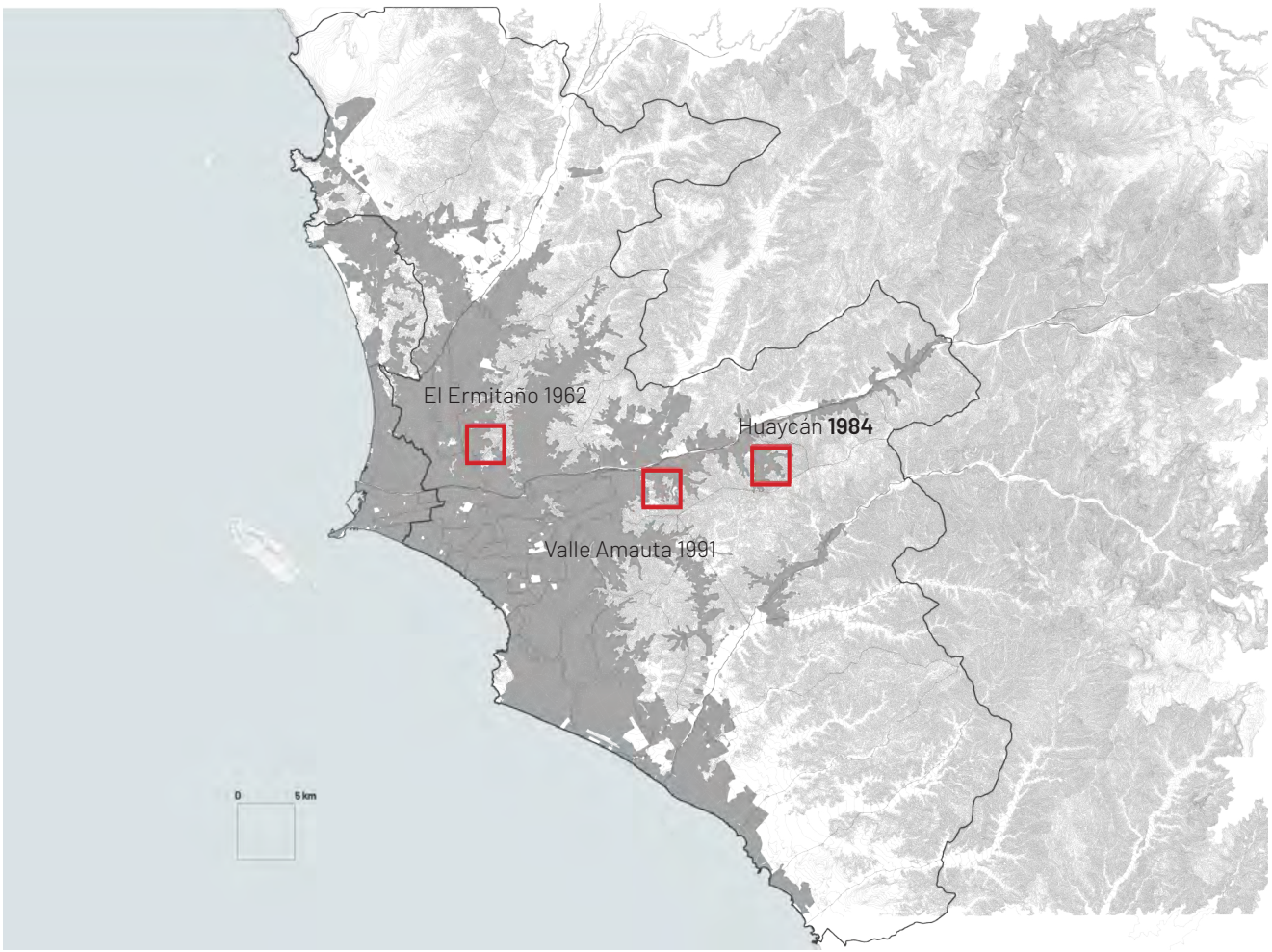


FIG. 7.4 The three cases used in the multiscalar analysis seen on Lima's metropolitan scale. Map developed by the author.

development and the socio economic and spatial outcomes of those decisions) and in three different scales (housing unit, settlement and metropolitan Lima). The indicators and goals (see chapter 4.4) defined in the assessment matrix are referred to and used as guiding structure of the analysis in each case.

Based on the framework derived from urban morphology studies (chapter 4.3) and the 'housing as a verb' approach (Turner, 1976) (chapter 2.3), an analysis on the basic activities that shape the environment in these three settlements is included in chapter 11. This understanding of the ordinary, along with the reflection of the multi-scalar analysis (chapter 12) is used as a starting point for the development of the proposal in this graduation project, which is considered as one step more in the urban development / housing process.

8 – El Ermitaño 1962

Independencia district, Lima

"La lucha era muy brava. Cuando entró la caballería todo jalaba al suelo, no respetaban ni banderas, nada. Entonces nosotros nos agarrábamos de las esteras, que las pisoteaban; todo para que no nos quiten... Cuando tiraban las bombas yo las agarraba fuerte, antes de que saliera el humo, y las tiraba a la caballería, y decían: 'A ella, a ella, agárrenla'. Yo decía a uno que se llamaba 'cantinflas' que me pasara el palo y le agarraba con ese palo antes de que vinieran, y le dí así a las ancas del caballo, y se arrodilló, y el coronel se bajó por encima de su cabeza, y me querían agarrar. Cuando ellos venían hacia mi lado o agarraba tierra y le echaba y no llegaban."

Testimony of Elena Manrique "La coronela", original settler of El Ermitaño. Original text in Proceso Social (1985) *El Ermitaño. Historia de una invasión (1962 - 1986).* Lima, Peru

"The fight was very hard. When the mounted police came, they put everything to the ground, they didn't respect flags or anything else. Then we would grasp the mats, that were stepped on by them, so they were not taken from us... When they threw at us the tear gas bombs, I took them firmly before the gas came out and threw them back at the mounted police, and they said: "To her, to her, get her". I told someone called "cantinflas" to give me the stick, I took it before they came and with it I beat the legs of the horse. It kneeled and the police colonel fell on top of his head, and they wanted to catch me. When they came to me I took sand in my hands and threw it at them, so they didn't catch me."

(translated by the author)

FIG. 8.1 First days in El Ermitaño in 1962. Picture © John F. C. Turner. Seen in Golda-Pongratz, Kathrin (2019) El Ermitaño (Lima). Un barrio autocontruido at http://www.galde.eu/es/ermitano-barrio-autoconstruido/ (April, 2019).

FIG. 8.2 Pampa de Comas and El Ermitaño in 1962. Picture by John Turner. Seen in Matos, 2012.

Original Environment

El Ermitaño was created in 1962. After the development of the first *barriadas* in the 1940s, in which organized groups of people occupied land close to the centre of the city (Matos, 2012), private interests and the State pushed low-income groups to occupy low-value land in the periphery of the city instead (Calderón, 2016: 199). Ciudad de Dios was created in the South of Lima (1955) and the light slopes of the nowadays districts of Independencia and Comas in the North were little by little filled with new settlements (fig. 8.3 and 8.4).

These areas in the North, of which El Ermitaño was part of, were in most cases developed on public land that was next to private agriculture areas. The latter ended up between consolidated high-cost land in central areas and the *barriadas*. These agriculture areas were preserved by their owners, who waited until their value was higher to develop them (the dark areas in fig. 8.2 are agriculture fields). This increase of value was due to their proximity to central areas but also to the investments made by the inhabitants of the *barriadas* to shape their environment and the extension of basic service networks (roads, water, sewage) carried out by the State (Rodríguez, 1969, mentioned in Calderón, 2016). Undisputed control of the land, as well as tacit agreements between State and private land owners and the lack of instruments of land management, made land owners the main beneficiary of all public and people´s investments.

It was during this period that the "two face" housing policies were implemented (Riofrío, 1978). While private developers were benefited and in charge of housing developments for middle and high income classes, in 1961, Law 13517 on ´marginal neighbourhoods´ attempted to set a framework for urban development and access to housing for low-income population. After the law became effective, the State nevertheless focused more on the regularization of informal settlements rather than the access of housing or land by the low income population (Calderón, 2016).

In the case of El Ermitaño, the preservation of private interests influenced the way the land was occupied. A group of people organized themselves in a housing association in 1962 and, taking advantage of the unstable political situation during an election period, occupied a piece of land close to a cotton plantation. The piece of land, called Aliaga farm, belonged partly to the Nicolini family, who owned the plantation, while the rest was unproductive land owned by the State (Proceso Social, 1985). When the group of settlers arrived to the place on the 7th of June, 1962, they were contested with violence by the police and had to retreat. After fifteen days, the organization managed to obtain permission from the Ministry of Housing and the National Housing Committee (JNV), which allowed them to occupy the non productive part of the area, leaving the cotton plantation untouched (Proceso Social, 1985).

All these events happened at the same time that a military coup, aimed at preventing the APRA from being in office after the election in 1962, helped the army to take control of the government for one year.

FIG. 8.3 Location of El Ermitaño in the city of Lima in 1962. Developed by the author.

FIG. 8.4 Slope gradient map in Lima in relation with land development in 1975. Developed by the author. Source of data: PLAM 2035 (Municipality of Lima, 2014)

Decision-making process

The social organization was key in the process of urban development in El Ermitaño. Previous experiences of land occupation in the 1940s and 1950s, as well as union movements, had helped to develop an associative culture. In El Ermitaño, the association was in touch with social leaders that had occupied Pampa de Cuevas (an area close to El Ermitaño) a few years before (Proceso Social, 1985). These leaders, along with lawyers and other professionals, were advisors to the organization representatives of El Ermitaño. Knowledge was transferred from past experiences into current processes of urban development. An inscription process started prior to the land occupation to have record of all the people that took part, elect its representatives and obtain an inscription on the official registry of associations. This would allow the social organization to engage into negotiations with public institutions. Nevertheless, key decisions as where to settle, were determined by the interests of private property, as explained previously.

Stakeholders involved in the decision making process:

- Land owners (Prop) (Nicolini family) were, years later, the land developers (Dev) of adjacent areas. They were interested in protecting their land, even though they were ultimately benefited by the land value increase. Negative attitude.
- Central Government (Gov) Aligned with land owners. Initially had neutral-negative attitude towards land occupation.
- National Housing Committee (JNV) Public workers (architects, etc.) in charge of designing the space of the urban development. Neutral-Positive attitude.
- Academics (Acad): Positive attitude. Several academics studied the case of El Ermitaño during the 1960s. Among them, John Turner.
- Civil society (Civ) (lawyers, other professionals): Positive attitude.
- Social organization in Pampa de Cueva (Org2): Positive attitude
- Neighbourhood organization in El Ermitaño (Org): Positive attitude

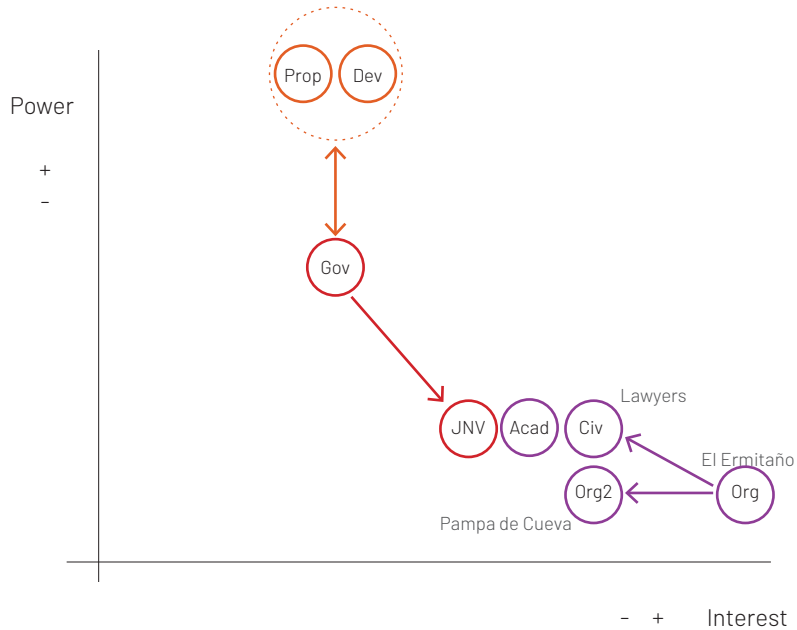
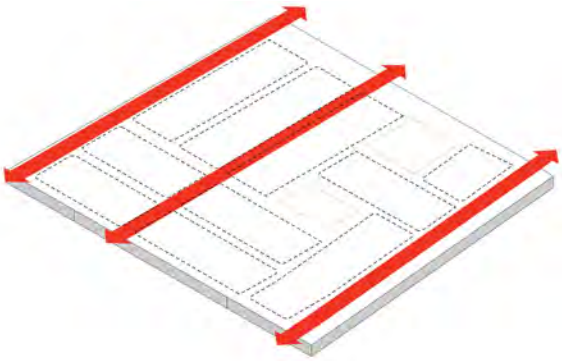


FIG. 8.5 (top) Organization meeting in El Ermitaño. (middle) Local district committee for the 1984 election process. (bottom) Women's organization in El Ermitaño. Source of images: Proceso Social, 1985

FIG. 8.6 Power - Interest diagram of the urban development process in El Ermitaño. Developed by the author.

Historic / Social event in the city and country / Event in the settlement scale / Informal activity / Activity related to informality



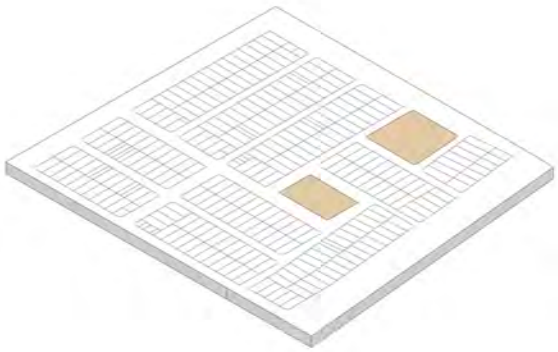


FIG. 8.7 Initial subdivision of plots performed by the organized community. Source: Proceso Social (1985) "Historia de la invasión a las pampas de El Ermitaño 1962-1986"

FIG. 8.8 (top) Communal works to make plot subdivisions. (middle) El Ermitaño in 1985. (bottom) El Ermitaño in 1985. Source of images: Proceso Social, 1985.

The families that took part in the initial development of El Ermitaño came from different places. Some were migrant families that had arrived to Lima shortly before the land occupation, but others had been tenants in other areas of the city already for some years. In any case, most of them had arrived to the city from other provinces of Peru, many of them from rural areas in the Andes regions.

The origin of the population is key to understand specific decisions that were made during the urban development process. As many other services (food provision, education or transportation), the subdivision of plots was initially carried out by the same population of El Ermitaño through collective works or *faenas* (Fig. 8.8-1). A few years later, the architects of the JNV arrived to El Ermitaño in order to implement a technical support program (Golda-Pongratz, 2019) and the definitive urban structure was defined. This structure (Fig. 7.7) was based on plots of between 150 and 160 square metres (Fig.8.12) and a basic grid structure that would connect the settlement to the main urban network. Big plots were demanded by the dwellers, who initially had planned a space of more than 200 square metres for each neighbour, as in other similar developments in other areas of Lima (Proceso Social, 1985) and probably more similar as well to rural plots. Even if building and consolidating such big areas would demand a lot of time and effort, property of as much land as possible was desired by most people. On the other hand, blocks were long and tried to fit in a much plots as possible while at the same time organize the urban space around the provision of public open spaces.

Even if the process of urban development was open enough to allow specific negotiations, such as the plot size, the urban structure was a rigid and homogeneous grid that did not have an organizational or social component. Only

Ayni is a way of common help that takes place in the **ayllu** (the extended family, the community), when any of its members needs support in any individual or collective task.

Faena is a collective work carried out by the community according to a collective objective or benefit. For example, building the access road to a settlement.

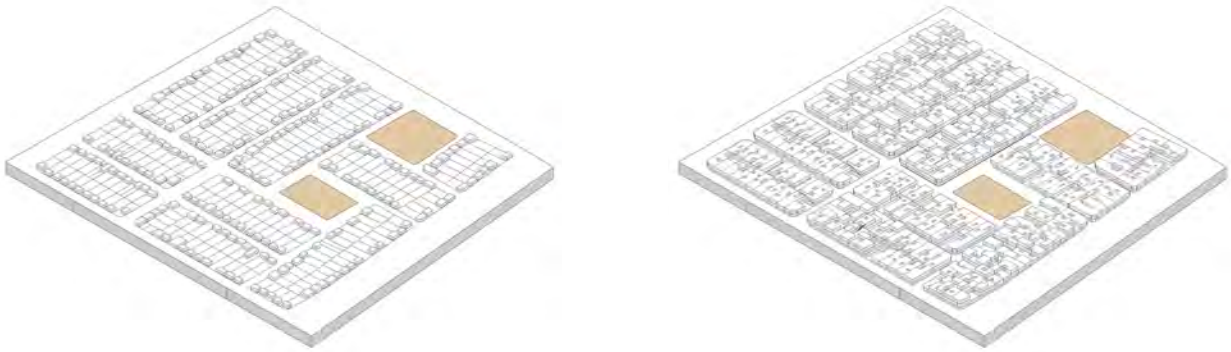


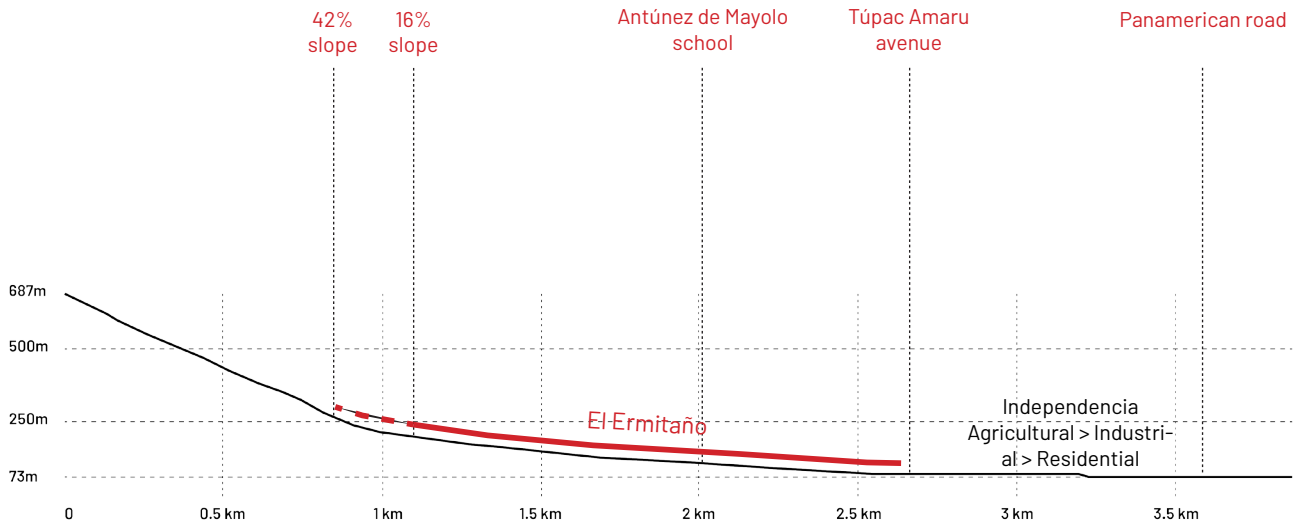
FIG. 8.9 Process of consolidation of an area of El Ermitaño. The Junta Nacional de Vivienda (National Housing Committee) teams defined the plot structure with specific negotiations with dwellers, (plot sizes or amount of people). Developed by the author.

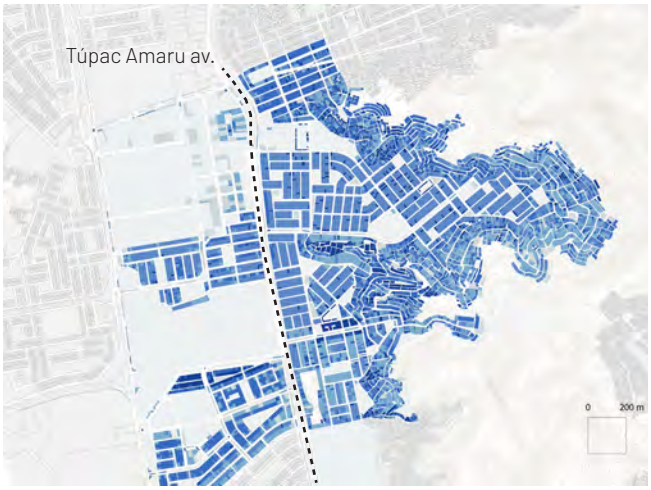
FIG. 8.10 Cross-section of El Ermitaño. Drawn by the author. Source of topographic data: Google earth

after the 1972, with SINAMOS (National System for Social Mobilization), that the social organization in El Ermitaño was structured into 4 sectors. In the original structure, plots were already subdivided, space defined and designed, giving very little room for further changes or decisions made by the urban dwellers.

Even if public spaces and room for services, such as schools or medical centres, were planned, many services did not arrive to the area until several years later (Proceso Social, 1985). Most of them were initially carried out by local groups in an informal way and the role of specific groups, such as women, was key to the implementation of a basic healthcare centre or dinning spaces for the community (Proceso Social, 1985).

Social organization was later involved in political processes, such as the municipal elections in 1984, in which the organization of El Ermitaño took part along political left parties. Esther Moreno Huerta, supported by the settlement´s organization, became mayor of the district of Independencia.





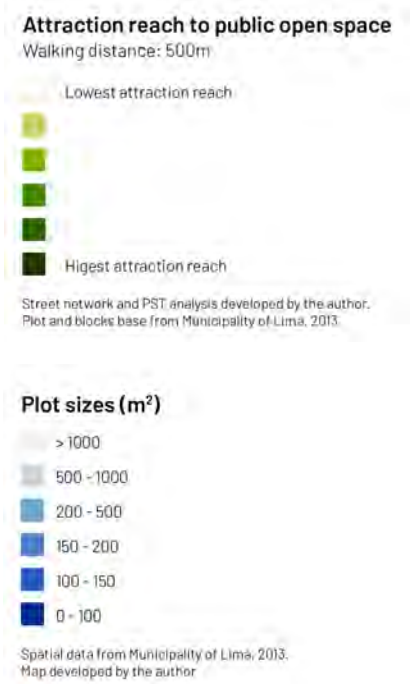


FIG. 8.11 Attraction reach within 500m to open spaces.Street network and PST analyses developed by the author. Block and plot information from Municipality of Lima, 2013a

FIG. 8.12 Plot sizes in El Ermitaño. Source of data: Municipality of Lima, 2013a

Outcomes

Many of the services and public spaces in El Ermitaño were implemented many years after the people arrived. In 1973 a basic healthcare centre was built and a pilot project on water and sanitation was implemented. Since then, many settlements have extended its limits over the slopes. Even if some of these were already occupied shortly after 1962, the steepest land was developed after the 1990s, like in many other areas in Lima.

Differences between lower and higher areas can be observed when analysing the accessibility to open spaces and the size of plots. The steepest areas of El Ermitaño do not answer to the same patterns than the light slopes of the original settlement. In the former, open space provision is often defined on the worst quality and lowest value land, that is generally located on the upper border of the settlement, making it harder to implement public space (Fig. 8.11, darkest green areas on the lower right corner).

On the opposite side of the slopes, the areas East of Túpac Amaru avenue (the former agriculture fields of Nicolini family) were developed as industrial zones in the late 1960 and beginning of 1970s. They were later transformed partially into residential areas. Provision and implementation of public spaces in these areas gives neighbours there a greater access to amenities, and its high integration in the overall city structure (fig. 8.14) gives the land a higher value, which attracts private business, such as hotels, or commercial activities. It is true that, despite its high metropolitan integration, the big blocks where the remaining industrial activity takes place, create a bottle neck for the original settlement of El Ermitaño, partially blocking its connection with other areas of the city. Túpac Amaru avenue divides as well these two areas, making the local connection on the local scale even more difficult.

El Ermitaño is nowadays close to important centralities of the city of Lima, such as the industrial and commercial hub of Independencia, or the National Engineering University (UNI). The implementation of metropolitan transportation systems, such as Metropolitano BRT also benefits this area, connecting it with other centralities in Lima.

The clear division East-West persists in the way the city is developed nowadays. While the pressure for urban development in low areas is translated into commercial centres, housing for middle classes and big scale projects developed on former industrial plots (Municipality of Lima, 2013a), this same pressure expands the settlements of El Ermitaño on the steep slopes in the East, endangering valuable ecosystems, such as the *lomas costeras*[1] (Golda-Pongratz, 2019). These last expansions are developed by land traffickers and sold to low income population, who, once more end up in low value land with no access to services or infrastructure.

Even if many people have been benefited from the development and expansion of the city in El Ermitaño, socio-spatial segregation is reproduced by two opposite and tacitly agreed ways of development on both sides of Túpac Amaru avenue. On the one hand, private formal land keeps higher levels of profitability at very low responsibility cost. On the other, informal developments on the slopes, and to a certain extent, informal rents (Cristóbal, n.d.), are the main way to access or buy land for low income population.

1 Lomas costeras are a seasonal ecosystem consisted low vegetation an different species of birds, insects and some small mammals that takes place during the winter on the high slopes due to the foggy clouds.

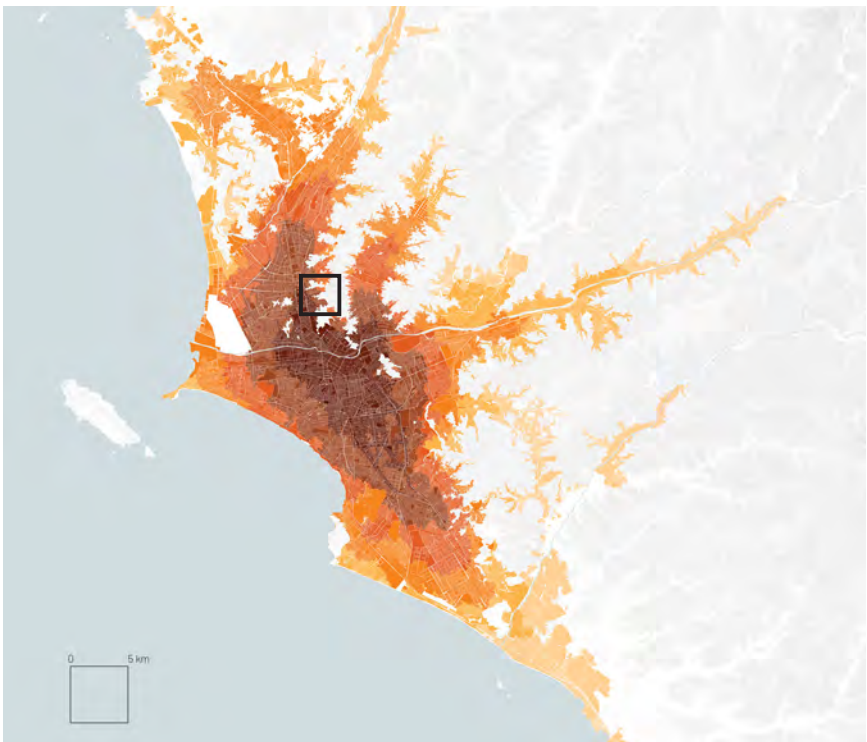


FIG. 8.13 The slope areas of el Ermitaño in 2016. Picture by the author.

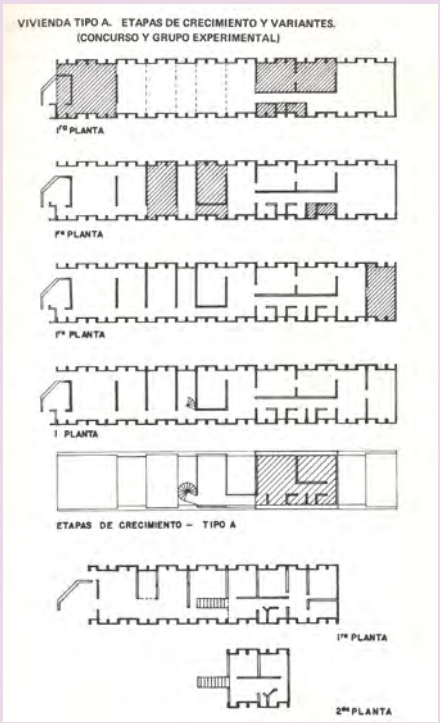
FIG. 8.14 Main access to El Ermitaño. 2016. Picture by the author.

FIG. 8.15 Location and street integration of El Ermitaño in relation to the metropolitan structure nowadays. Map developed by the author.

PREVI EXPERIMENTAL HOUSING PROJECT 1966 (LIMA, PERU)

Based on the postulates and theories of John Turner and others in the 1960s, who had studied El Ermitaño during its first years, the international competition PREVI was launched in 1966. Its main goal was to come up with new possibilities for a neighbourhood for low-income population, in which investment would be shared between the State and the dwellers. Open-ended designs would grant a higher share in the decisions and investments for the dwellers. Houses would be built gradually over time on a individual plot and neighbourhoods would be organized by clusters or communities.

26 different offices of architecture (13 international offices and 13 from Peru) participated and developed designs for low rise and high density housing typologies. Designs needed to be implemented progressively in time and had to include a proposal on the organization on neighbourhood scale. Many teams developed ideas on pre-fabrication of building components that would be developed on-site in a nearby facility and implemented by the dwellers with little technical assistance.

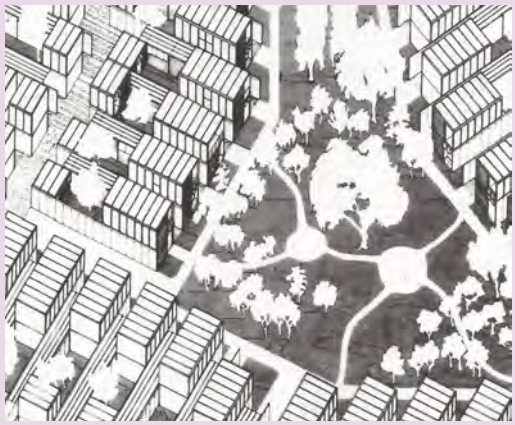


Despite its innovative approach and the high quality of the designs, only a part of the project was implemented. Even though it had later influence in projects such as Próceres in Lima or Elemental in Chile, the ideas of PREVI were never implemented in mass scale in Peru.

FIG. 8.16 PREVI incremental housing designed by Kurokawa, Kikutake and Maki (1968) Source: Land, 2015

FIG. 8.17 Picture of PREVI in 2009. Taken by Iñaki Romero

FIG. 8.18 PREVI collective public space designed by Kurokawa, Kikutake and Maki (1968). Source: Land, 2015)



9 – Huaycán 1984

Ate district, Lima

"El caso de la toma de tierras de Huaycán (...) fue algo planificado desde la municipalidad de Lima y el gobierno local de Ate Vitarte. Fue la primera vez que una invasión se realiza con el auxilio de la policía nacional. En la entrada de la carretera central estaban apostados policías para permitir que los grupos que estaban debidamente identificados pudieran ingresar. Eso contrastaba con los traslados forzados vividos desde la época de Velasco."

Pedro Sulca and Federico Godiño, former representatives of Huaycán (2017) Interview with Luis Rodríguez and Pablo Muñoz (eds.) *La ciudad de las laderas. Workshop Limápolis 2016*. PUCP and Municipality of Ate. Lima

"The land occupation of Huaycán was planned by the Municipality of Lima and the local municipality of Ate Vitarte. For the first time a squatting was carried out with the help of the national police. At the entrance of the central road, police forces were positioned to allow groups that were correctly identified to get in. That was very different to the forced displacement that was lived since the time of Velasco."

(translated by the author)

FIG. 9.1 Air view of the urban development in Huaycán in its early stages. Source: Personal file of Eduardo Figari.

FIG. 9.2 15th July Avenue in Huaycán in 1984. Source: Personal file of Eduardo Figari.

Original environment

More than two decades after El Ermitaño was developed, many things had happened in Lima and Peru. Two military dictators had been in power (1968-75 and 1975-80), a shift in housing policies had given *barriadas* a central spot, the agrarian land reform had slightly decrease the power and impunity of private agricultural land owners, but also fragmented the land market and some innovative housing projects had been implemented, such as PREVI, the self managed of Villa el Salvador or Próceres.

The self managed community of Huaycán (CUAH) was one of the first cases in the history of Lima in which the authorities did not wait for the land occupation to take place in order to deal with it. Organized squatting became part of municipal housing and progressive urban development programs (Calderón, 2016: 249). This was fostered by the confluence of left wing parties that had won the municipal election of 1984 and it benefited from different mechanisms and laws implemented in previous years to foster administrative decentralization, including competences on housing policies and programs.

644hectares of unproductive land were selected to locate an initial group of 12,000 families (Figari, 2017). Even though there were tools and regulations for the Municipality to claim this land for the implementation of housing programs, its supposed (Calderón, 2016: 249) private owners sued the Municipality and tried to delay the project. This shows how much power land owners still had in any kind of urban development and might be also one of the reasons why the land chosen was 17km away from Lima, isolated from existing urban areas (fig. 9.3), and respected the agricultural productive area of Pariachi, connected by the Central Road with the city of Lima. The land value was very low compared to other areas and would probably raise less complains by land owners.

Huaycán was (like El Ermitaño and the barriadas in the 1960s) implemented on the light slopes of the periphery. The area was close to the Rímac river, exposed to flooding risk[1] (fig. 8.4) and had rocky soils (fig. 9.6). Rocky soils, if harder to work with, provide a better base for construction. Isolation, as it will be explained later, fostered alternative water provision systems, non-dependent from the city general networks, which give Huaycán a relative water autonomy in case of water shortage.

1 Huaycán´s etymology, according to some of its inhabitants (BarrioMio, 2012) might come from *Huayco*, a quechua word that refers to seasonal flooding events that take place during winter, when rains in the Andes bring mud, water and debris to inactive creeks and valleys.

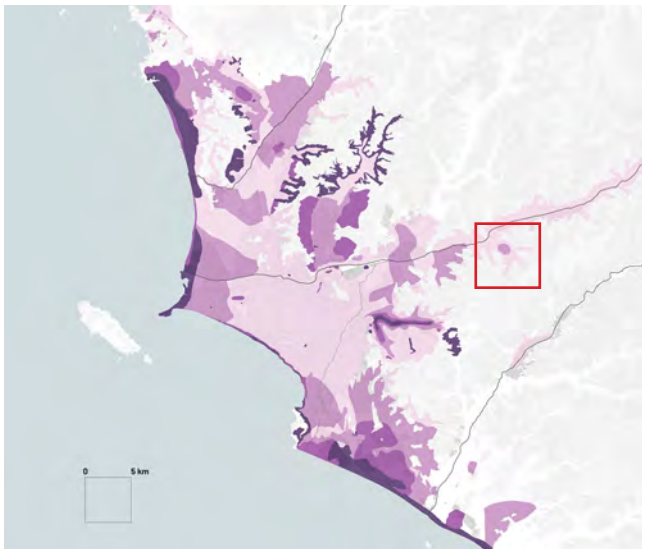


FIG. 9.3 Location of Huaycán in the city of Lima in 1984. Developed by the author.

FIG. 9.4 Risk of flood in Lima. Developed by the author. Source of data: Source of data: IGEMMET

FIG. 9.5 Slope gradient map in Lima. Developed by the author. Source of data: PLAM 2035 (Municipality of Lima, 2014)

FIG. 9.6 Type of soil in Lima. Developed by the author. Source of data: SISMID - IGP

Exposure to risks and location in the metropolitan scale

Flooding
- High risk
- Medium risk
- Reach of tsunami in case of 9.0 earthquake

Gradient
- > 40 %
- 30 - 40 %
- 20 - 30 %

Soil
- Rocks
- Superficial clay and sand
- Thin sand
- Sea and swamp deposits, landfills

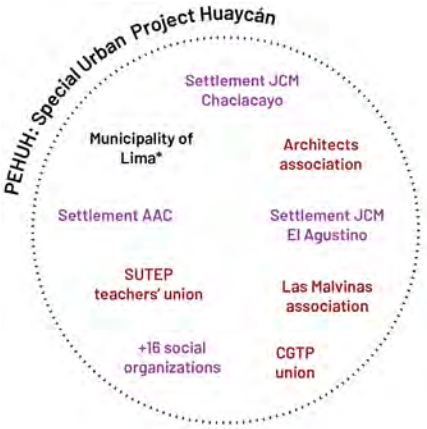


FIG. 9.7 Main stakeholders that took part in the central committee of the PEHUH. *The Municipality of Lima was the only member with right to veto. Source: done by the author

FIG. 9.8 Lima Municipality Technical team in Huaycán, 1984. Source: Personal file Eduardo Figari.

FIG. 9.9 Lima Municipality Technical office in Huaycán, 1984. Source: Personal file Eduardo Figari.

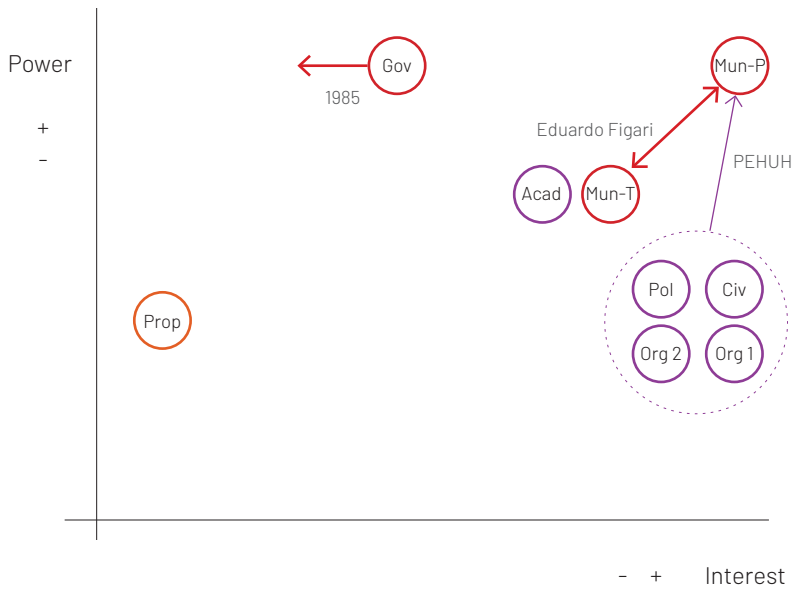
Decision-making process

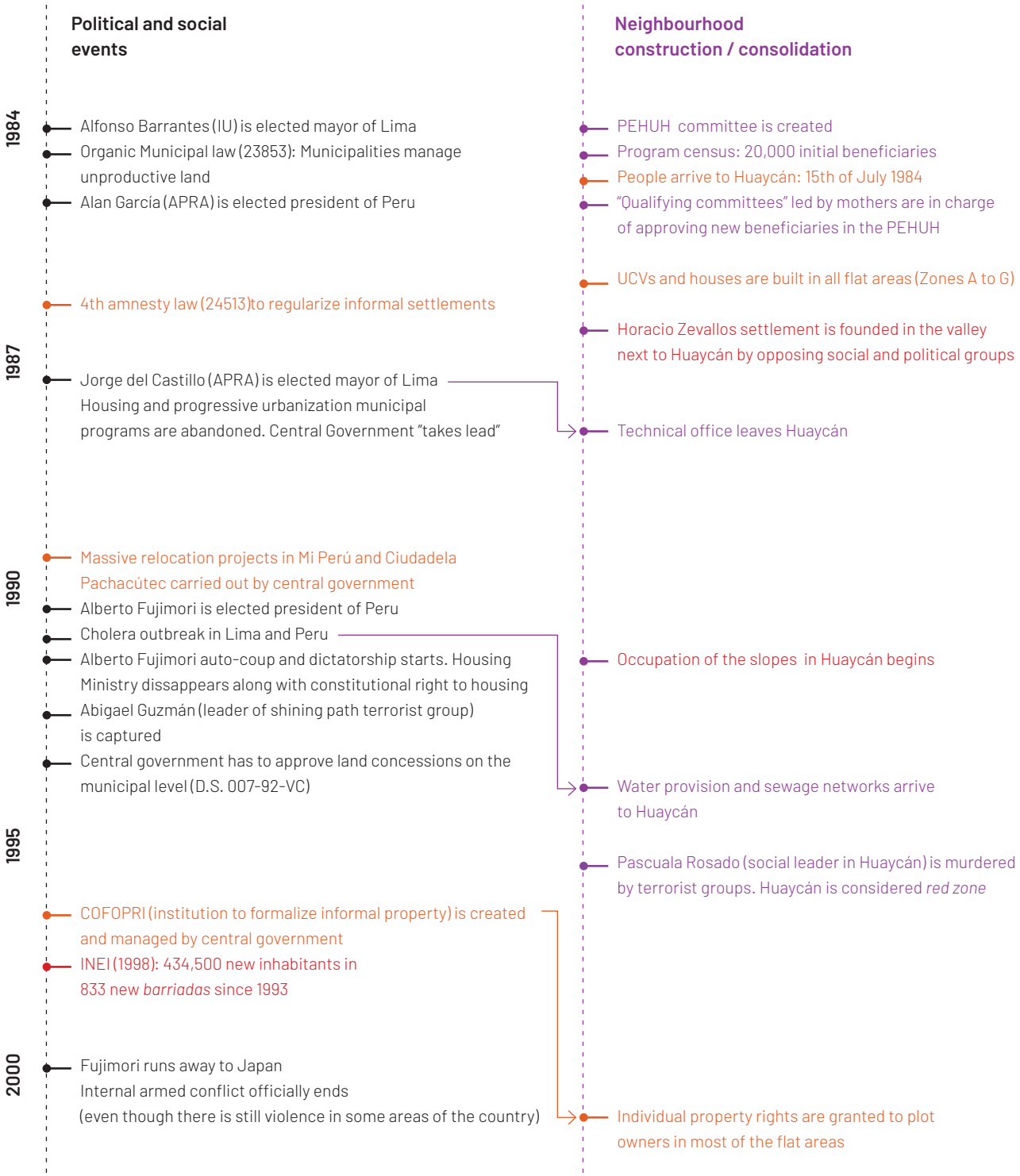
Once the land was selected, a management group was created in order to discuss the details of the urban development. The group (PEHUH) included 23 associations (fig. 9.7) and was led by the Municipality of Lima. A young architect, Eduardo Figari, member of IU (the party that had won the election), was appointed to represent the Municipality and to develop the spatial proposal for Huaycán in coordination with the PEHUH. The Municipality was the only member with right to veto (Figari, 2017).

There were several works and activities carried out before the land was occupied. Firstly, a Municipal Decree (040) became effective and a registry was created to inscribe all participants (12,000 families). This registry, that grew with time, was subdivided in smaller management groups and it was mainly women who managed the inscriptions (Figari, 2017). With a first basic fee of 5 soles (less than 2 USD nowadays) topographic, hydro-geologic and risk studies were carried out (Figari, 2017). After that, the urban proposal was developed and discussed in several meetings with the 23 associations.

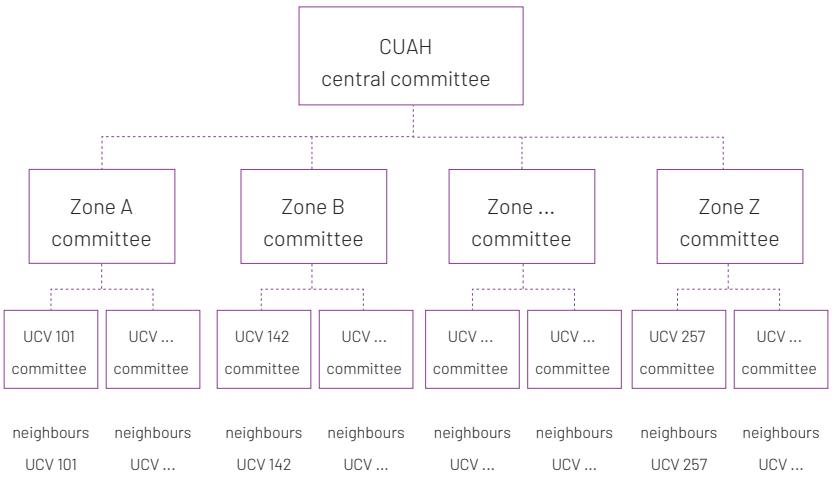
Stakeholders involved in the decision making process:

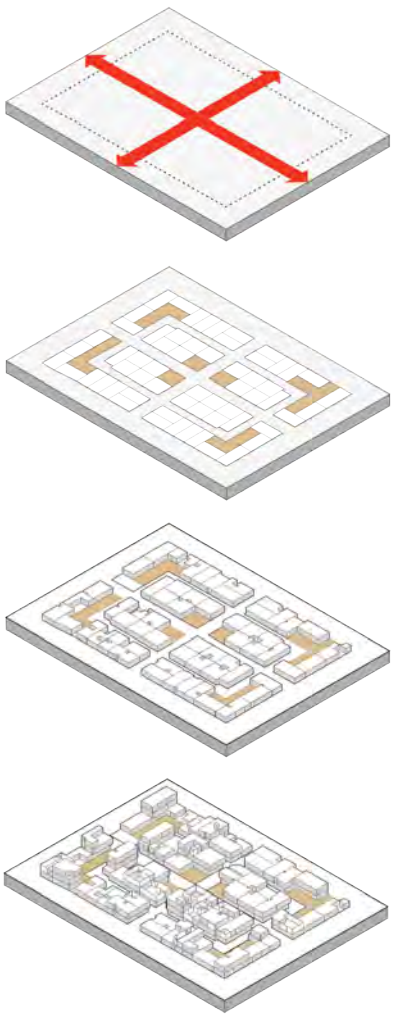
- Municipality of Lima (politicians) (Mun-P) Positive attitude.
- Municipality of Lima (technical teams) (Mun-T) Positive attitude
- Social organizations (settlers) (Org 1) Positive attitude
- Social organizations (unions, associations) (Org2) Positive attitude
- Political parties (Pol) Positive attitude
- Land owners (Pro): Poppe family. They had bought public land for mining concession and sued the Municipality. Negative attitude
- Central government (Gov): From neutral attitude to negative attitude. The approach and political interest changed from Belaúnde (1980) to García (1985). The latter aimed at centralizing housing programs again and, since Huaycán was not part of his agenda, the central government lost interest in it.





Historic / Social event in the city and country / Event in the settlement scale / Informal activity / Activity related to informality





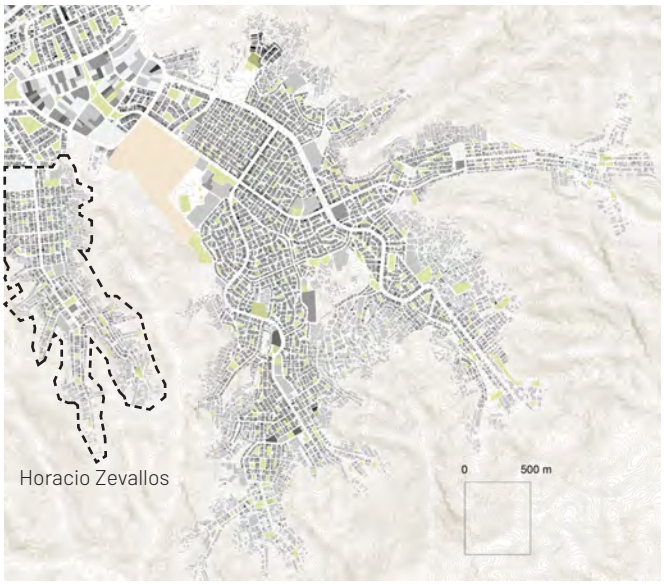
One of the most interesting aspects of the spatial configuration of Huaycán is the correlation between its urban and its social structure. The basic communal housing unit (UCV) included 60 families that had to manage one hectare of land and make the subdivision of plots. They had to respect two basic rules: (1) the size of plots (90sqm), land surface (1ha approx.) and amount of families (60), and therefore, the urban density, would be the same for all UCVs and (2) two streets had to pass through the UCV, so they did not become isolated units or gated communities (Figari, 2017). The rest of the design was open, allowing for different configurations to be made by the organized dwellers. People often worked in collaboration with the technical office implemented by the Municipality (Fig.9.8 and 9.9), in which also architecture students were employed. An open ended design was chosen not only for democratic reasons, but also practical ones. In words of Eduardo Figari (2017) "it is insane trying to design twelve thousands plots for twelve thousand families."

Each UCV has its representatives. Zones, bigger portions of the territory that include several UCVs,have also elected representatives. A central committee, elected by the whole community of Huaycán (CUAH) represents all Zones (fig. 9.10 and 9.11). This organic structure provides a framework in order to make decisions on different levels and engage into negotiations with big scale institutions and organizations.

FIG. 9.10 (top left) Huaycán map with all zones. Source: Drawn by Jitka Molnarova. Barrio Mio program (Municipality of Lima, 2013a)

FIG. 9.11 (top) Social organization structure of Huaycán. Developed by the author.

FIG. 9.12 (left, sequence) Process of consolidation of one UCV. From the two basic rules (circulation and limits) to the construction of the houses and public spaces / facilities). Developed by the author. Data found in Ate district cadaster. Time process is an exemplification based on experience.



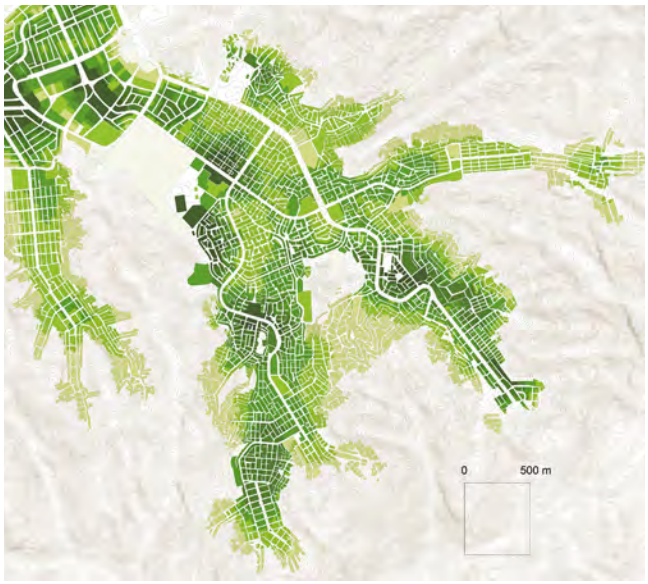


FIG. 9.13 Floor Space Index. In darkest grey, the highest FSI index. Developed by the author. Source of spatial data: Municipality of Ate. Cadaster, 2016.

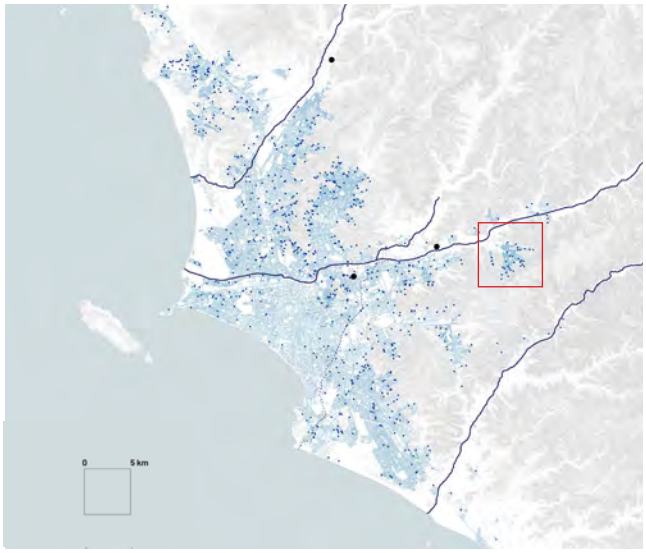
FIG. 9.14 Attraction reach (500m) to open spaces in Huaycán. In dark green areas that have better access to open space within 500m. Developed by the author.

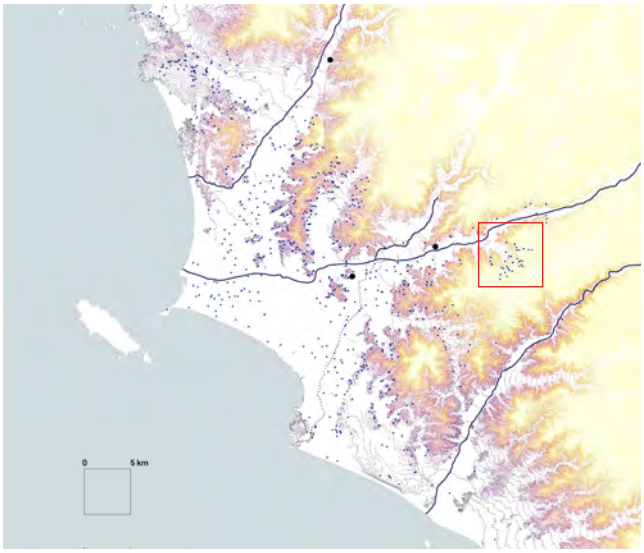
FIG. 9.15 15th July Avenue in 2012. Source: BarrioMio (Municipality of Lima, 2013)

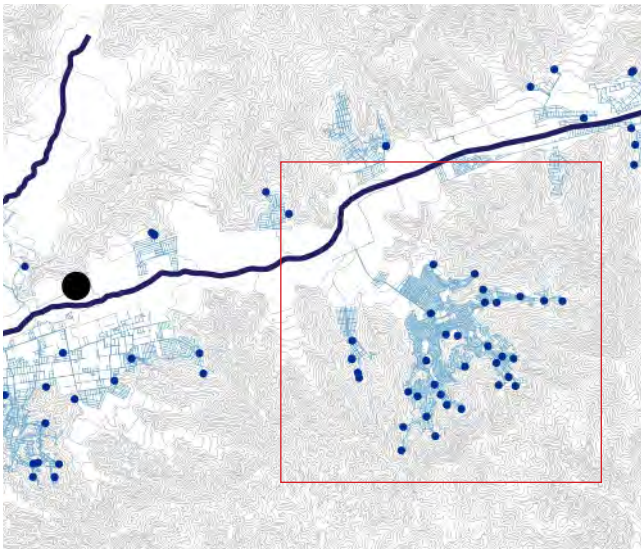
Outcomes

When analysing the spatial outcomes of Huaycán nowadays, we observe access to public open space is more or less evenly distributed, except for the last expansions on the slopes, less integrated to the public space network, especially the area that connects the two valleys towards the South of the area (fig. 9.14).

The FSI index (fig. 9.13) shows us two interesting outcomes. Firstly, the main avenues, which are nowadays more consolidated (fig. 9.15), are being developed vertically, often giving room to business but also to apartments that are informally rented (Cristóbal, n.d.). Secondly, there are slight differences between Huaycán and Horacio Zevallos, a settlement built more or less simultaneously in a valley towards the West (fig. 9.12), showing the latter lower levels of consolidation. Pedro Sulca and Federico Godiño (2017), former representatives of Huaycán, make a connection between the level of consolidation, or amount of built surface, and the size of plots: "there was a quarrel because some people [in Huaycán] proposed 90 sqm plots and other people [in Horacio Zevallos] proposed 160 sqm plots. The people who proposed 160sqm earned the support of dwellers, but, what is the result nowadays? It [Horacio Zevallos] is a dormitory city, almost like a cemetery." This is partially due to the high construction investment that individual bigger plots require and to the lower resulted density, which can be seen as a disadvantage for commercial areas.







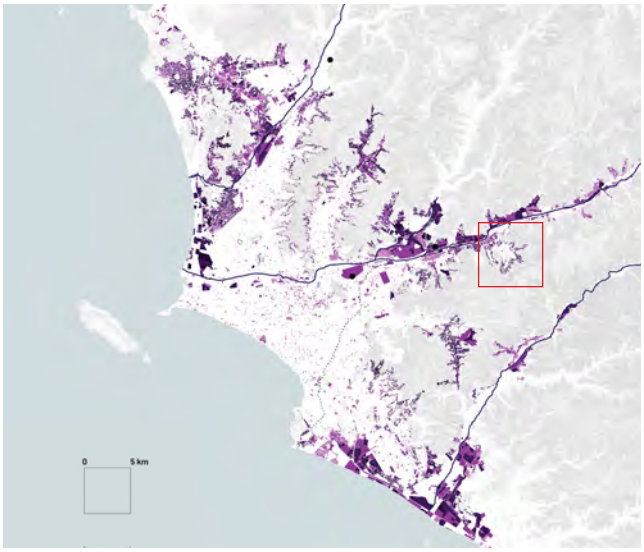


FIG. 9.16 Water provision network. Developed by the author. Source of data: SEDAPAL. 2014

FIG. 9.17 Relation between topography and water-provision infrastructure (deposits and treatment plants). Developed by the author. Source of data: SEDAPAL. 2014

FIG. 9.18 Water provision network. Detail in Huaycán area. Developed by the author. Source of data: SEDAPAL. 2014

FIG. 9.19 Lack of access to basic services. Source of data: INEI, 2007

Water Structure

- Main water streams and rivers
- Surco Canal
- Topography (contour lines every 25m)
- Drinking water treatment plants
- Water distribution reservoirs
- Drinking water network
- Sewage treatment plants
- Sewage network

Lack of access to basic services

- 60 - 80 % lack of services
- 40 - 60 % lack of services
- 20 - 40% lack of services
- 0 - 20% lack of services

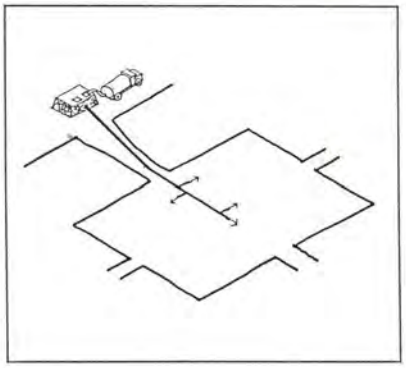


FIG. 9.20 Diagram on communal water storage. Source: Figari E. (1986) *Huaycán. Una Experiencia de Gestión Democrática e Innovación Tecnológica para la Vivienda Popular*

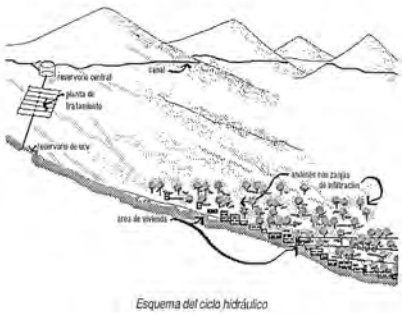


FIG. 9.21 Diagram on water provision system. Source: Figari E. (1986) *Huaycán. Una Experiencia de Gestión Democrática e Innovación Tecnológica para la Vivienda Popular*

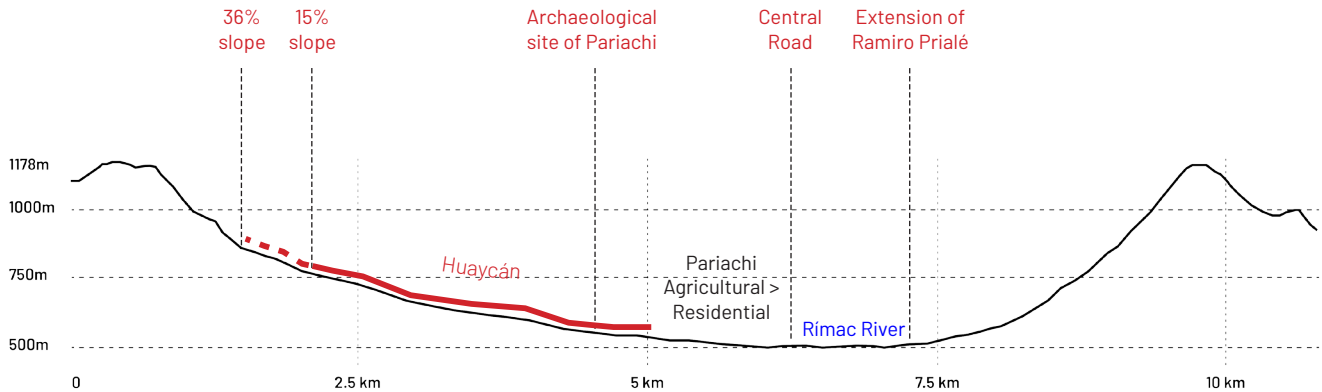
FIG. 9.22 Cross-section from Huaycán to Rímac river. Drawn by the author. Source of topographic data: google earth

Regarding urban services, Huaycán´s initial isolation led to alternative proposals for water provision. The original plan proposed bringing water directly from the upper stream of the Rímac river, treating it using green areas on the slopes (fig. 9.21), and building common water storage facilities for each UCV (fig. 9.20). Despite these proposals, water comes nowadays from the subsoil, being Huaycán on higher ground than the main water treatment plants of Lima (fig.9.17). During the water crisis in March 2017, when Atarjea water treatment plant collapsed due to flooding and *huaycos*, Huaycán was not affected by the water shortages.

The topography of the settlement and its relationship with the structure of the East valley of Lima determine its isolation (fig. 9.22). There are only two access points for more than 120,000 people. The whole area of Huaycán clings through these two points on a linear structure (central road, Rímac river, future expansion of Ramiro Prialé highway) to connect with the rest of the city. Pariachi (the former agricultural area close to the river) is currently being developed into residential areas with a different logic (bigger plots, enclosed residential areas) and works as a bottle neck for Huaycán, increased by the presence of the archaeological site of Pariachi.

Since the 1980s Huaycán has changed a lot. The same way as in El Ermitaño, settlements have expanded to the slopes. New settlements are still called UCVs and the correlation between urban structure and social structure remains, even though the spatial rules and limitations of the UCV are no longer followed.

In social terms, the overall organization´s structure remains, but its activity has decreased considerably. One the one hand, social organization identified with left political groups was highly affected by the internal armed conflict during the end of the 1980s and 1990s. Social leaders were persecuted by both sides (terrorist groups and the State) and even killed in some cases, like Pascuala Rosado in Huaycán. On the other hand, many of the collective struggles (water services, property titles, etc.) were accomplished for the original UCVs years ago. Despite the existance of other issues that affect people's life in Huaycán (public space, work, insecurity), basic needs are covered, social participation is not as vibrant and meetings not as massive as in the 1980s and 90s (Godiño & Sulca, 2017). Only the most recent UCVs on the slopes have an active, but often fragmented in relation to other UCVs, organization. There have been also some community representatives that have later worked in the district municipality of Ate or engaged into politics.



VASO DE LECHE AND COMEDORES POPULARES (LIMA, PERU)

In many Latin American societies, in times of economic and material crisis, collective practices have managed resources and provided the community with equitable access to specific services. These practices, often fundamental activities related to the care of our bodies and of the weakest members of the community, are usually led by women. E.g. *comedores populares* (popular dinning rooms) or *ollas comunes* (melting pots) aimed at distributing food in times of scarcity. Scale economy makes bulk purchases of supplies more economic and, with a good administration and labour (in this case by women), they reach a wider number of people than if each person managed his or her own economy and supplies.

Vaso de leche ("glass of milk") was a program officially developed in 1984 by the Municipality of Lima[1] in times of a severe economic crisis. It was based in the aforementioned collective practices and other previous experiences, such as the self managed *comedores populares*, PAE and PAMI programs (García Naranjo, 1992). Its main objective was to deliver milk and food to vulnerable population, mainly children up to 6 years old and pregnant women (Cerna, 2015). The program, which due to social pressure was up-scaled to the national level in 1995 (García Naranjo, 1992: 16), is organized on women´s committees that manage supplies, provided by Province Municipalities. These organizations of women were the ones who created social pressure to make effective law 24049 to institutionalize Vaso de Leche in 1985 at the national level (García Naranjo, 1992), and later in 1991 pressed the authorities to implement law 25037 that declared "survival organizations" critical, giving them a legal basis, as well as a permanent share of the Republic´s General Budget (Calderón, 2016: 324).

This is an example in which control (over an activity) is distributed among different stakeholders. Budget or goals are defined on a national level, but the management and distribution of the practice is carried out by women´s, usually mothers´, committees. The space in which these practices take place depends also on each committee. In some cases, private kitchens on a rotatory basis are used to distribute milk and food, in other cases, a permanent place, such as collective dinning room or a community building is used.

1 Vaso de Leche was implemented by the same municipal government that developed the self managed community of Huaycán.

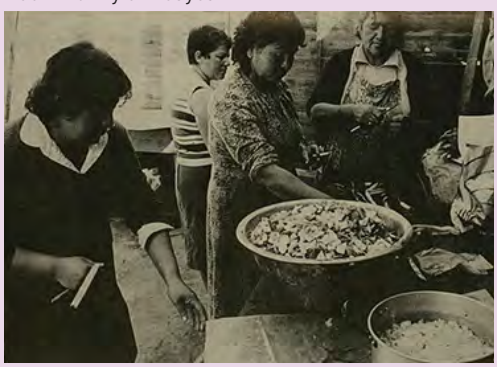


FIG. 9.23 "Ollas comunes" (common pots) in Mexico. Source: origenesde la crisis en mexico. Seen at http://librosebooks.org/libro/origenes-de-la-crisis-en-mexico/ (March, 2019)

FIG. 9.24 "Vaso de Leche" in Lima. Seen at https://elbuho.pe/2016/08/piden-concejeros-provinciales-defender-personas-ya-no-reciben-vaso-leche/ (April, 2019)

10 – Valle Amauta 1991

Ate district, Lima.

"El departamento es bueno pero ya te viene con un diseño. Pero cuando tú tienes tu casa tú quieres hacerlo a tu manera."

Neighbour from UCV 169 - extension, Zone L. Huaycán. Focus group carried out in the context of the consultancy work: Conurb (2016) *The city of the slopes. Research and proposal for a social housing program in the slopes of Metropolitan Lima* (non published report for the Ministry of Housing, Construction and Sanitation of Peru)

"The department is good but it already comes with a design. Instead, when you have your own house, you can make it your own way.¨

(translated by the author)

FIG. 10.1 Settlements on the hills of Valle Amauta (Ate). Source: BarrioMio program, 2013

Original Environment

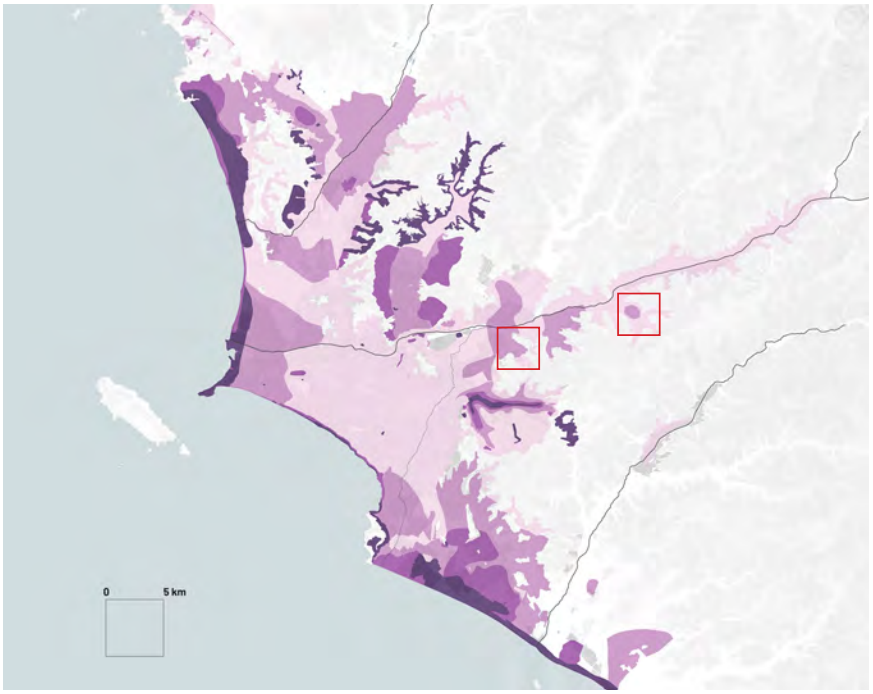
During the 1990s most of the flat land close to the central areas of Lima was already developed. Only the valleys of Lurin and Chillón river, used for agricultural purposes, and some land in far away areas (Jicamarca in San Juan de Lurigancho, or Huachipa in the East) had not been absorbed by the rapid urbanization of Lima (fig. 10.3).

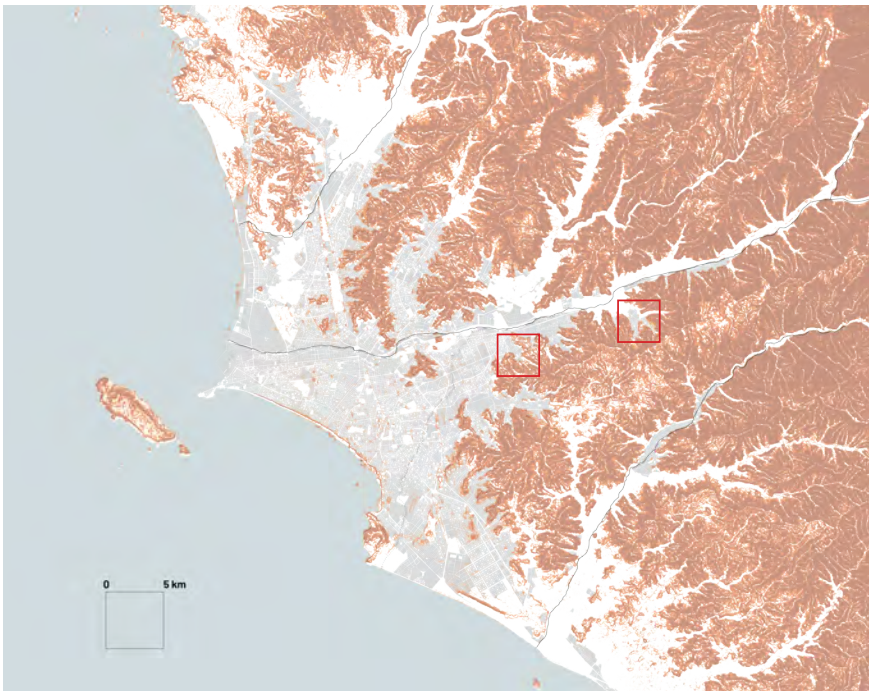
During Fujimori's government (1990-1992) and dictatorship (1992-2000) most of the mechanisms and tools that regulated and influenced the housing sector were dismantled. The Central Mortgage Bank (Banco Central Hipotecario), the Housing Bank and the Ministry of Housing were wiped out (Calderón, 2016: 220). The regulations on the land put in place during the 1980s that gave competences to Municipalities, disappeared. Decisions were centralized again and law 26505 allowed agricultural land to be sold without any restriction. This last measure fostered the illegal land market, that was already operating since the 1970s, when land owners saw their property threatened by the agrarian reform and started to illegally sell and develop their land (Calderón, 2016: 208).

All these measures, influenced by the neoliberal turn in the United States and other countries, were supported by the World Bank and other international agencies (Fernández Maldonado, 2015). The market was expected to solve the housing issues in Lima and Peru. Regarding the *barriadas* and informal settlements, COFOPRI, the national agency for land formalization, was created. It was implemented on the basis that, through formalization of their property and its inclusion in the formal market, people would be able to access formal loans and credit and overcome poverty. In the end, the main outcome of this approach, along with de-regulation and the increase of the illegal land market, was the increase of informal urban developments.

Most of the new developed areas were peripheral and far from Lima´s centralities. Slopes made services, such as water or sewage, even more difficult to implement.

The areas in the East (Valle Amauta (fig. 10.1) and Huaycán) that are studied in this chapter were located on rocky soil, but in many other cases (San Juan de Lurigancho or Comas), many informally developed slopes were located on lower quality land for construction (fig. 10.2)





Exposure to risks and location in the metropolitan scale

Soil
- Rocks
- Superficial clay and sand
- Thin sand
- Sea and swamp deposits, landfills

Gradient
- > 40%
- 30 - 40 %
- 20 - 30 %

FIG. 10.2 Type of soil in Lima. Developed by the author. Source of data: SISMID - IGP

FIG. 10.3 Slope gradient map in Lima. Developed by the author. Source of data: PLAM 2035 (Municipality of Lima, 2014) and USGS Earth Explorer https://earthexplorer.usgs.gov/

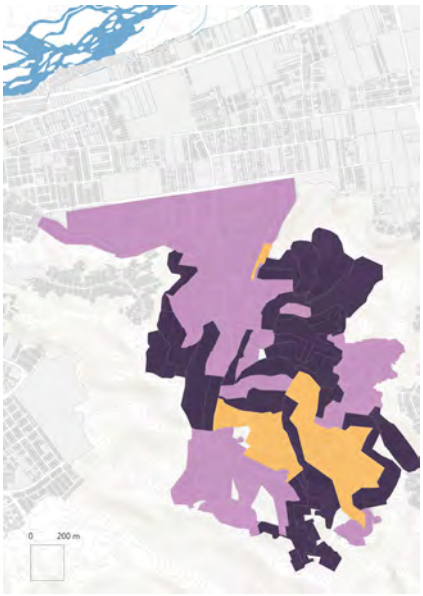
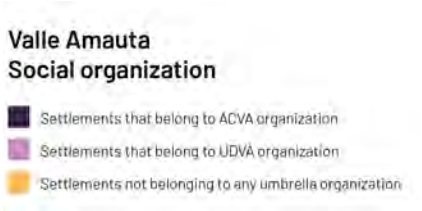


FIG. 10.4 Neighbourhood social organizations in Valle Amauta. Based on work by Gabriella Huanay in PUI Valle Amauta. Barrio Mío program. (Municipality of Lima, 2013a). Drawn by the author.

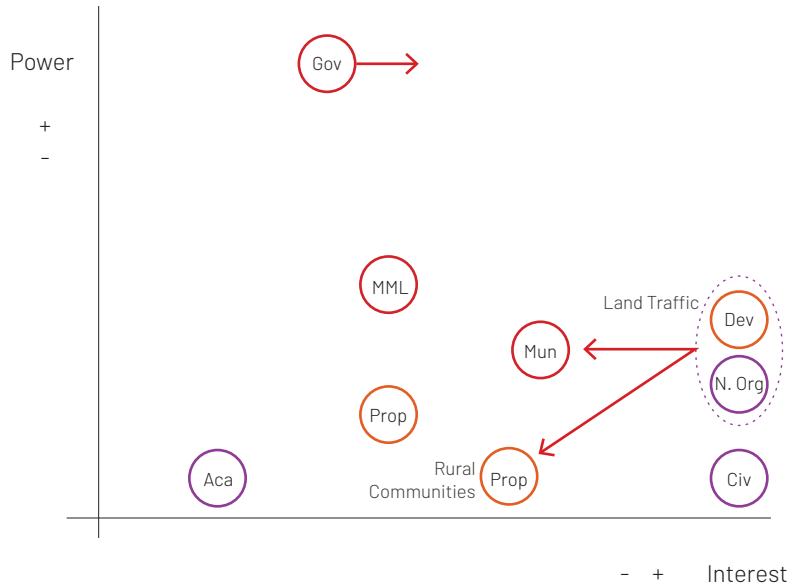


Decision-making process

Both in the case of Valle Amauta and Huaycán, the withdrawal from the Central Government in the 1990s and the neutral attitude of the Municipality of Lima fostered a new set of actors to carry out the new urban developments for the low-income population. Informal agents already purchased agricultural or non-productive land in the 1980s and 90s and sold it (without services, roads and barely anything more than a subdivision of plots) to low income population. Some of these agents have become mafias that purchase land to rural communities on the fringes of the city and manage an illegal land market, sometimes through tacit agreements with local municipalities. This process has often created a division in the social organization (fig. 10.4), between people in low areas (small private land owners) and people arriving to the slopes, who, in opposition to what happened in the previous studied cases, access land by buying it.

Stakeholders involved in the decision making process:

- Municipality of Lima (MML) Neutral attitude.
- Municipality of Ate (Mun): Positive attitude. Authorities or professionals in local municipalities are often bribed by illegal land developers so they "let them be".
- Neighbourhood organizations (N.Org) Positive attitude. Social leaders sometimes (not always) become illegal land developers or work closely with them.
- Central Government (Gov) Neutral attitude. This
- Land Developers (Dev) Positive attitude. What started as informal agents that would illegally buy and develop land has turned into big informal developers and mafias controlling the illegal land market (Calderón, 2016: 210).
- Land owners (Prop): Owners of land in the urbanized areas do not see with good eyes the new informal developments, whereas the rural communities who sell land on the fringes of the city have a positive attitude.
- Civil society (Civ): Positive attitude. People who need a house.
- Academia (Aca): Neutral attitude: *Barriadas* have lost attention, especially from architecture faculties.




Political and social events
Neighbourhood construction / consolidation
1990
1995
2000
2010
2015
Alberto Fujimori is elected president of Peru
Cholera outbreak in Lima and Peru
Alberto Fujimori auto-coup and dictatorship starts. Housing Ministry dissappears along with constitutional right to housing
Abigael Guzmán (leader of shining path terrorist group) is captured
Central government has to approve land concessions on the municipal level (D.S. 007-92-VC)
COFOPRI (institution to formalize informal property) is created and managed by central government
INEI (1998): 434,500 new inhabitants in 833 new *barriadas* since 1993
Fujimori runs away to Japan. Internal armed conflict officially ends (even though there is still violence in some areas of the country)
Democratic restoration: Paniagua (2000-2001), Toledo (2001-2006)
Participatory budgeting is implemented in Peru (Law 28056)
Techo Propio social housing program starts its implementation
COFOPRI has granted 720,000 land titles in the region of Lima since 1996
Susana Villarán is elected as mayor of Lima
Ollanta Humala is elected president
Neighbourhood upgrading program is created Ministry of Housing (DS-004-2012)
BarrioMio program is created (Municipality of Lima)
Metropolitan Plan PLAM 2035 is developed (never approved)
Luis Castañeda is elected mayor of Lima
PLAM 2035 and BarrioMio program are dismantled and dismissed
Pedro Pablo Kuczinsky is elected president
COFOPRI has granted 840,000 land titles in the region of Lima since 1996
Settlements in Huaycán and Valle Amuta expand to semi-flat areas
Huaycán and Valle Amauta are cosidered Red Zones during the internal armed conflict
ACVA, the second neighbourhood associations group is created in Valle Amauta
Water provision arrives to Huaycán and Valle Amauta in the areas with light-slopes
Pascuala Rosado (social leader in Huaycán) is murdered by terrorist groups. Huaycán is considered *red zone*
Settlements expand beyong 25-30% slopes
Individual property titles are granted by COFOPRI to plot owners in most semi-flat areas
Infrastructure works are carried out by different institutions (contention walls by Ministry of Labour, Paved streets by Ministry of Housing, stairs by Metropolitan Municipality of Lima, etc.)
Benavides is elected mayor of Ate
Settlements expand to the steep slopes
Individual property titles are granted by COFOPRI to plot owners in the first slope expansions
Barrio Mio program (MML) develops integral projects through participatory processes in Huaycán and V. Amauta
Benavides is elected mayor of Ate for the second period
Huaycán starts process to become an independent district
Historic / Social event in the city and country / Event in the settlement scale / Informal activity / Activity related to informality

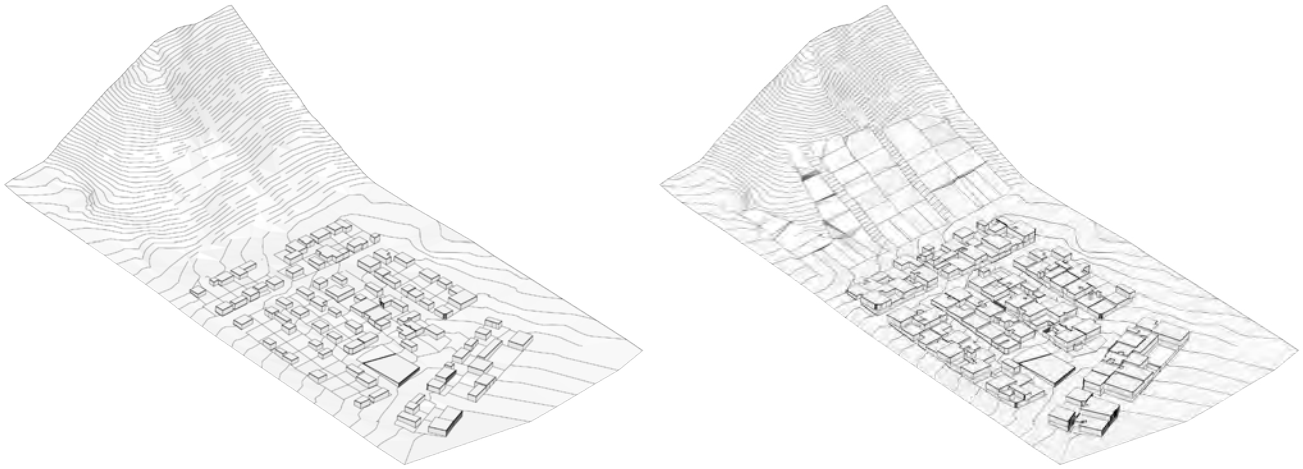


FIG. 10.5 Process of consolidation of a settlement in a slope area. Criteria for the urban form is usually decided by the land trafficker or the former social leaders from the flat settlements. Developed by the author. Data found in Ate district cadaster. Time process is an exemplification based on experience.

The classification of areas on the slopes of the city, borrowed from the Municipality of Lima (2013b) (fig. 5.10) and explained at the end of chapter 4, provides a useful framework to understand urban developments in relation to topography. As it was said before, most of the semi-flat areas or light slopes in the periphery were developed before the end of 1990s, such as El Ermitaño or Huaycán (fig. 10.5-1), on areas with gradients generally lower than 20%. It was at the end of these light slopes, on the least integrated and low-value areas, where most of the provision of space for public facilities was left (red area on fig. 10.5-3) or where the debris of construction was thrown away. This intermediate space, called fracture line (Municipality of Lima, 2013b), was the starting point for the new urban developments, that were carried out on slopes with gradients from 20% to 35%.

These areas are usually at the fringe between urban districts (in the case of Valle Amauta and Huaycán, the Municipality of Ate) and rural communities (in the case of Huaycán, Collanac community). Neither the physical nor the administrative border of them is clearly defined. The land is purchased, when not taken violently, as non-urban land and transferred from the rural community to illegal land agents, who subdivide it and sell it for lower prices than formal areas. In 1999, the illegal market sold land for one third of the cost of formal land (Calderón, 2016: 223). This way of urban development had given access to land to 11% of urban population in Lima in 1998 (Calderón, 2016: 214). Nowadays, along with informal rents in popular consolidated areas, the informal land market is the main way to access housing by the low-income population (Calderón, 2013).

Social representatives from settlements in semi-flat areas become sometimes also informal developers (Sulca & Godiño, 2017). Let´s remember how, in the case of Huaycán, but also in El Ermitaño and many other places in Lima, they had an active role in the original development of their settlements. They often met and dealt with local or central authorities and professionals to press for the implementation of services in behalf of their community, they learnt about regulations and policies and many times, through their own work, took part in construction activities. In a context of lack of governance and regulation, in which many of the close-by urban developments are carried out informally, all this knowledge becomes a useful tool

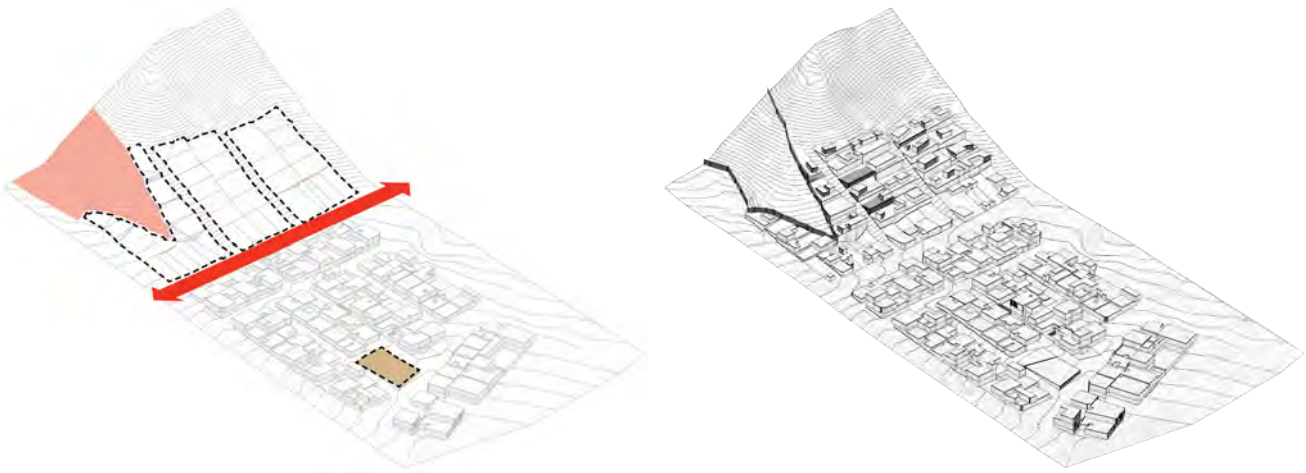
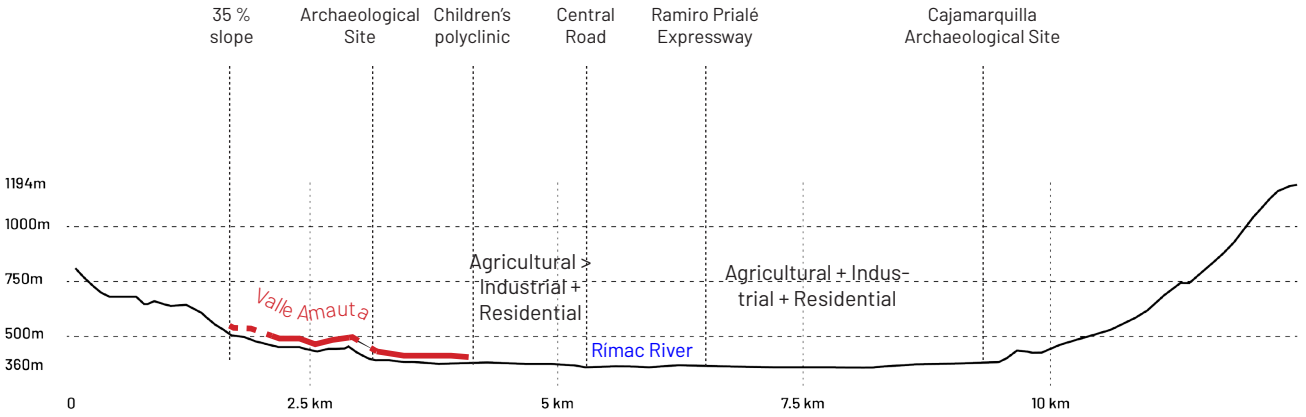


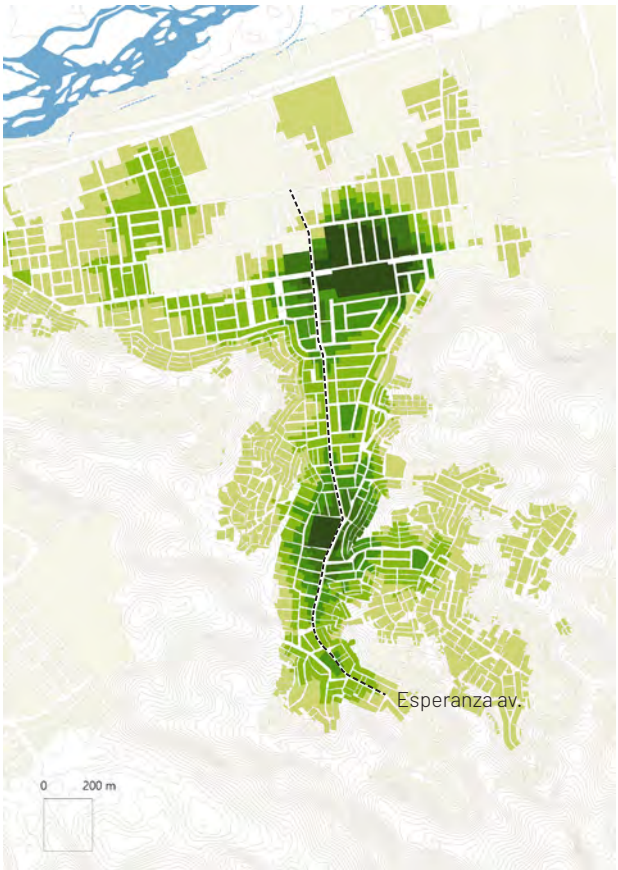
FIG. 10.6 Cross-section of Valle Amauta and Rímac river valley. Drawn by the author. Source of topographic data: google earth, 2019

to make use of the situation, get personal economic profit and even provide land for the next generation.

Dwellers that access land on the illegal market do it by buying it (Calderón, 2016). Differently to the two previous cases, organization is usually not present during the first stages. Decisions regarding the structure of the settlement are already made by informal land developers. Since basic services, access roads or stairs are not implemented, organization, nevertheless, appears later in order to carry out collective work (*faenas*) or to press local or central authorities for services.

One last aspect of interest in this third case is the relation of academia with these informal urban developments. Despite the existence of many urban researchers studying the phenomenon, many of them from the social sciences, the topic is often not present in graduate programs, especially in private universities and architecture faculties.





FSI (m^2/m^2)

0
0.00 - 0.75
0.75 - 1.50
1.50 - 2.50
2.50 - 4.00
4.00 - 11.00

Spatial data from Municipality of Ate Cadaster, 2016

Attraction reach to public open space
Walking distance: 500m

Lowest attraction reach

Higest attraction reach

Street network and PST analysis developed by the author.
Plots and blocks base from Municipality of Lima, 2013.

Outcomes

Similar spatial outcomes are seen in Valle Amauta when compared to the two previous cases. Floor space index (amount of built surface in relation to the area of the plot) is higher in high integrated areas, such as Esperanza Avenue (fig. 10.7), than on the slopes. In Valle Amauta, this is nevertheless more extreme than in Huaycán or El Ermitaño. Several reasons may be the cause for this. On the one hand, the configuration of stakeholders involved in the development reduced the public control on the share of public space or land for public services, such as schools or healthcare centres. Due to this reason, these spaces, though considered by the land developers, were left on the fringes of the settlements, on the lowest value land, on steep slopes very difficult to develop and access (fig. 10.15 a soccer field on top of the slopes). Therefore, most of the existing and developed facilities and activities that create centrality and, therefore, increase value of the land and foster consolidation are in high integrated areas such as Esperanza av. (fig. 10.17) or around public spaces (fig. 10.14) On the other hand, topography of Valle Amauta is intricate and complex, and most of the urban areas are on slopes with a gradient higher than 20%. Therefore, highest value is again concentrated on the small share of flat land.

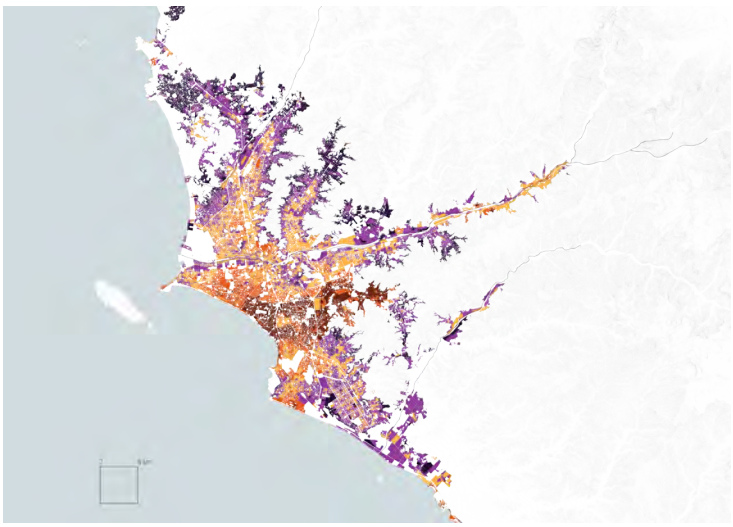
FIG. 10.7 (previous page) FSI Analysis on Valle Amauta. Darkest grey is high floor space index. Data from Ate Municipality Cadaster, 2016. Developed by the author

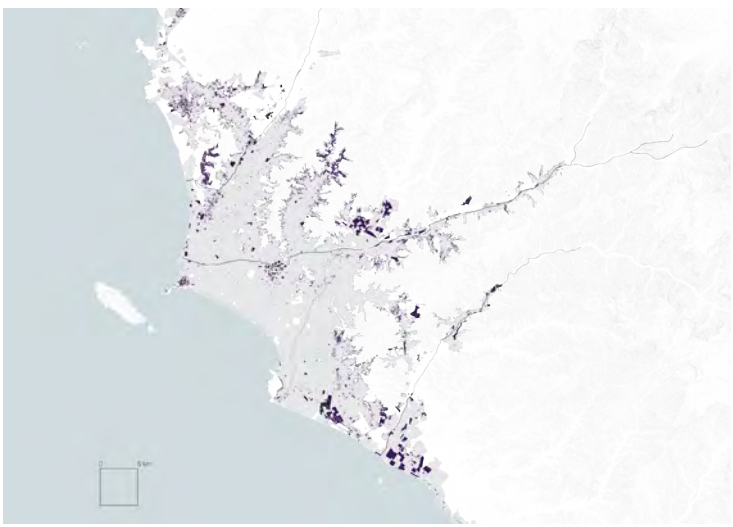
FIG. 10.8 (previous page) Valle Amauta attraction reach within 500m to open spaces. Developed by the author

FIG. 10.9 Urban areas located on more than 20% of slope. Developed by the author. Source of data: PLAM 2035 (Municipality of Lima, 2014) and USGS Earth Explorer https://earthexplorer.usgs.gov/

FIG. 10.10 Average income per person in 2013. Drawn by the author with data from INEI 2013.

FIG. 10.11 Qualitative deficit in Lima. Data from INEI, 2007. Drawn by the author. Qualitative deficit is defined as precarious quality of construction, housing overcrowding and lack of water and sewage infrastructure (INEI, 2007)





Urban blocks on steep slopes

- 20 - 35%
- 35 - 47%
- more than 47%

Source of data: PLAM 2035 (Municipality of Lima, 2014) and USGS Earth Explorer (2019)

Average income by person according to socio-economic classification 2013
(Nuevos Soles / Dollar)

Low	less than 575.70 / less than 205.61
Middle low	575.70 - 898.99 / 205.61 - 321.06
Middle	899.00 - 1,330.09 / 321.07 - 475.02
Middle high	1,330.10 - 2,192.19 / 475.03 - 782.93
High	more than 2,192.19 / more than 782.93

Blocks with housing qualitative deficit

One or more conditions of housing qualitative deficit: precarious quality of construction, housing overcrowding and lack of water and sewage infrastructure (INEI, 2007)

FIG. 10.12 (bottom) Panoramic view on the Monterrey archaeological site and main valley of Valle Amauta. Source: BarrioMío, Municipality of Lima, 2013a

FIG. 10.13 (next page top left) Disconnected public investment in Valle Amauta. Yellow stairs carried out by Municipality of Lima climbing to nowhere, patches of contention walls or a soccer field that gives its back to nearby settlements. Picture by the author.

FIG. 10.14 (next page top right) 25 de Junio alley in Valle Amauta. Source: BarrioMío, Municipality of Lima, 2013a

FIG. 10.15 (next page middle left) Soccer field on the slopes of Valle Amauta. Source: BarrioMío, Municipality of Lima, 2013a.

FIG. 10.16 (next page middle right) Low consolidated house on the slopes of Valle Amauta. Picture by the author.

FIG. 10.17 (next page bottom left) Esperanza avenue in the flat areas of Valle Amauta. Source: BarrioMío, Municipality of Lima, 2013a

FIG. 10.18 (next page bottom right) Gated community developed on former industrial land in Santa Clara, Ate. Source: Google street view, 2019

Similarly to what happened in Huaycán with the area of Pariachi, several archaeological sites are located on the semi-flat areas of Valle Amauta, increasing the bottle neck effect of its complex topography (fig. 10.6 and 10.12).

Access to open public space is also higher on semi-flat areas, being the slopes the less accessible and least serviced areas (fig. 10.8). Regarding the flat areas, big industrial plots are now being redeveloped as residential areas. Housing, that coexists with big industrial areas, has little access to close-by open space. This is partially explained by the fact that in many of these redevelopments, specifically the ones fostered by Mi Vivienda housing program (see chapter 6.2), construction and urban requirements are lowered to decrease the cost, as well as promote enclosure as a solution to insecurity and in favour of "exclusivity"[1]. These plots are developed as gated communities (fig. 10.18), creating inner private open space, in which it is almost impossible to meet anyone who does not own an apartment in the same condominium.

Zooming out on the metropolitan scale and going back to the analysis on socio-spatial segregation, carried out in chapter 4, there is a clear correlation between the low-income areas (fig. 10.10), the areas on slopes with a gradient over 20% (fig. 10.9) and the areas with most severe qualitative housing deficit (fig. 10.11). This creates a vicious cycle that will be very hardly solved by the market, reproducing patterns of socio-spatial segregation on the slopes of Lima. Low income population live in precarious conditions (fig. 10.16), which decreases their chances to overcome their material situation. Not only this, but they also live in areas that are more difficult to develop: basic services are more expensive to extend, public spaces are more scarce and less accessible or houses are more expensive to build, due to technical requirements, such as deeper foundations.

In terms of equitable outcomes and according to the spatial justice assessment framework developed in chapter 3, the process of urban development in these areas of Lima is far away from being just. Not all population have access to basic living conditions or have access to a safe living environment. Regulations are consciously

1 An example of the advertising slogans are: "*Sol de Santa Clara es un complejo residencial exclusivo pensado en ti y en tu familia*" ("Sol de Santa CLara is an exclusive residential complex thought for you and your family") or "*El ingreso al condominio será controlado por garitas de seguridad con cámaras de vigilancia y cerco eléctrico*" ("Entrance to the condominium will be controlled by security posts with surveillance cameras and electric fences."). Seen at https://nexoinmobiliario.pe/proyecto/venta-de-departamento-90-sol-de-santa-clara-ate-lima-lima-madrid-ingenieros (May, 2019)

absent from these areas. In order not to foster their expansion and reproduction, informal settlements are not included in zoning plans and, except for formalization programs, they are often excluded from public programs and investments. Even if they could benefit from the public investments carried out in semi-flat or more consolidated areas, these investments are usually disconnected and lack a bigger perspective (fig. 10.13). Fragmentation and disconnection of public investment creates a loss of opportunities and resources that has a negative impact on these areas and in the efficiency of the investments themselves (Espinoza & Fort, 2017).

URBAN VILLAGES (SHENZHEN, CHINA)

The "arrival city" is a phenomenon that takes place all over the world (Sanders, 2011). There are different mechanisms to provide a place in the city to newcomers or floating population that usually cannot afford a place to live on the official housing market. That is the case of the urban villages in Shenzhen. They have often been surrounded by the urban developments of the growing city and have changed from a rural location and activity to a urban one, relatively close to job opportunities or urban services. Nevertheless, their position outside the urban administration system due to the rural status of the land, creates an opportunity for the former farmers to redevelop their land or build extensions to their houses and informally rent the resulting spaces to arriving population (Pu Hao, 2012).

Chinese dual land system grants collective ownership of the rural land to the urban villagers. This situation creates an alternative to the otherwise centralized management of land and urban development, providing room for people that would be left out of the system. This slight distribution of control over the land creates diversity in terms of urban development, but also creates sub-standard housing conditions and services (Pu Hao, 2012: 13). An interesting discussion, thus, rises from this grey zone. What elements is it possible to regulate without suppressing the practice itself (Turner, 1972)? What institutions (formal or informal) may be able to take responsibility for minimum living conditions?

FIG. 10.19 Traditional housing in villages in Shenzhen Source: Wang, Wang & Wu (2009) Urbanization and Informal Development in China: Urban Villages in Shenzhen

FIG. 10.20 Post-1990 family-built housing in urban villages. . Source: Wang, Wang & Wu (2009) Urbanization and Informal Development in China: Urban Villages in Shenzhen

11 – Ordinary Lima 2019

El Ermitaño, Huaycán and Valle Amauta

Many authors have written and reflected on the potential of the ordinary. This graduation project draws from Jennifer Robinson´s (2006) approach on ordinary cities, as a way to get rid of linear models of developmentalism or modernity that prevent alternative views and proposals on the city, opening up possibilities to develop alternative narratives from the every day life. This work also builds on the structure of the ordinary (Habraken, 2000) as a way to acknowledge the spatial potential that every day life activities and control of the space on different scales have to change the environment.

In line with these two approaches, one last moment in history (the current situation) is studied on the three cases. This overall analysis on the activities and clusters of activities in the three areas allows us to see how urban form and specific configurations of stakeholders and activities have led to specific types of urban life and urban development. This last moment is used as a starting point for the development of the proposal, explained in part IV of this report.

11.1 – **Activities that shape the environment**

Building on the lessons extracted from the analysis of the three previous cases, this chapter focuses on one last temporary scenario. The resulting spatial configuration and specific stakeholder frameworks are influenced and have an impact on space and how urban life developed in each case. This iterative process (context > activities > context), as explained by Turner (1976), is directly connected to how these activities ´are housed´. The understanding of the current situation will therefore be key to see the role of housing (as a verb) to foster an alternative way of development, with a more fair process and outcomes of the urban development.

A data base with the geographic location of social and economic activities in Lima is used to understand what are the most relevant activities in the selected locations. The data used is a work in process by the INEI (National Institute of Informatics and Statistics) (2017), it is not complete (there are some gaps[1] in the chosen locations) and it was not openly accessible or published at the time of the elaboration of this graduation project. Therefore, all the graphics, maps and tables developed from this database have to be seen with caution. They are used to highlight dynamics or activity clusters in specific areas, which are afterwards look upon and compared with complementary data and google street view.

Firstly, a quick overview on the data shows us which activities and dynamics have a stronger presence in the three areas. According to this data base, the most common activities in all three cases are corner shops, followed by restaurants in the case of Valle Amauta and El Ermitaño, and churches in Huaycán (table 11.1)

TABLE 11.1 Overview of productive activities in the three settlements. Population data from INEI, 2007 (last data available spatially). Activities data from INEI, 2017 (not published). Developed by the author.

	El Ermitaño			**Huaycán**			**Valle Amauta**		
Population	80,237			119,421			57,625		
Population in area with data	52,552			56,278			57,625		
% of data	65%			47%			100%		
Total of activities	1,229			1,427			1,793		
People per activity	43			39			32		
	Name	#	Pple/ Act	Name	#	Pple/ Act	Name	#	Pple/ Act
Most frequent activity	Corner shop	304	173	Corner shop	527	107	Corner shop	540	107
2nd most frequent activity	Restau-rant	154	341	Church	90	625	Restau-rant	154	360
3rd most frequent activity	Hotel	74	710	Restau-rant	78	722	Pharmacy	79	729

1 In the case of Huaycán, the data base is not complete, so only areas with data are considered, including Horacio Zevallos, which is the biggest valley to the West.

By considering only the most common activities, relevant analysis might be left aside. Activities that are not so common but have a great impact in the environment might be not considered. In order to avoid this issue, a list with the 20 most common activities is developed for the three cases (table 11.2), reaching down to activities that take place only 13, 11 and 14 times, respectively. Even with this table, there might still be cases that remain outside the classification. Markets, for example, fall out of this list, but have an important role in shaping the environment. Due to their impact and their relationship with other activities, these cases often appear in later steps of the analysis, when looking on specific areas in more detail. Nevertheless, it is necessary to have in mind that some activities have to be included in further steps.

TABLE 11.2 20 most frequent productive activities in the three settlements. Data from INEI, 2017 (not published). Developed by the author.

El Ermitaño	# activities	Huaycán	# activities	Valle Amauta	# activities
Total	1229	Total	1427	Total	1793
Corner shop	304	Corner shop	527	Corner shop	540
Restaurant	154	Church	90	Restaurant	160
Hotel	74	Restaurant	78	Pharmacy	79
Hairdresser	40	Internet shop	61	Hardware shop	63
Pharmacy	38	Car repair shop	53	Internet shop	60
Basic and primary education	34	Hairdresser	45	Basic and primary education	59
Bookshop	25	Hardware shop	42	Church	58
Internet shop	24	Basic and primary school	38	Book shop	58
Cafe and juice shop	24	Bookshop	36	Hairdresser	55
Clinic	23	Community activity	32	Car repair shop	36
Church	23	Furniture workshop	32	Clinic	33
Cair repair shop	23	Pharmacy	28	Secondary education	24
Parking space	20	Parking space	22	Bakery	24
Hardware shop	18	Petrol and gas retail sale	17	Cafe and juice shop	21
Bakery	17	Gas cylinder and other specific retail services	16	Community activity	20
Furniture workshop	17	Secondary education	14	Gas cylinder and other specific retail services	18
Fruits and vegetables shop	17	Textile workshop	13	Furniture workshop	15
Laundry shop	13	Real Estate	12	Hotel	15
Gas cylinder and other specific retail services	13	Bakery	11	Parking space	14

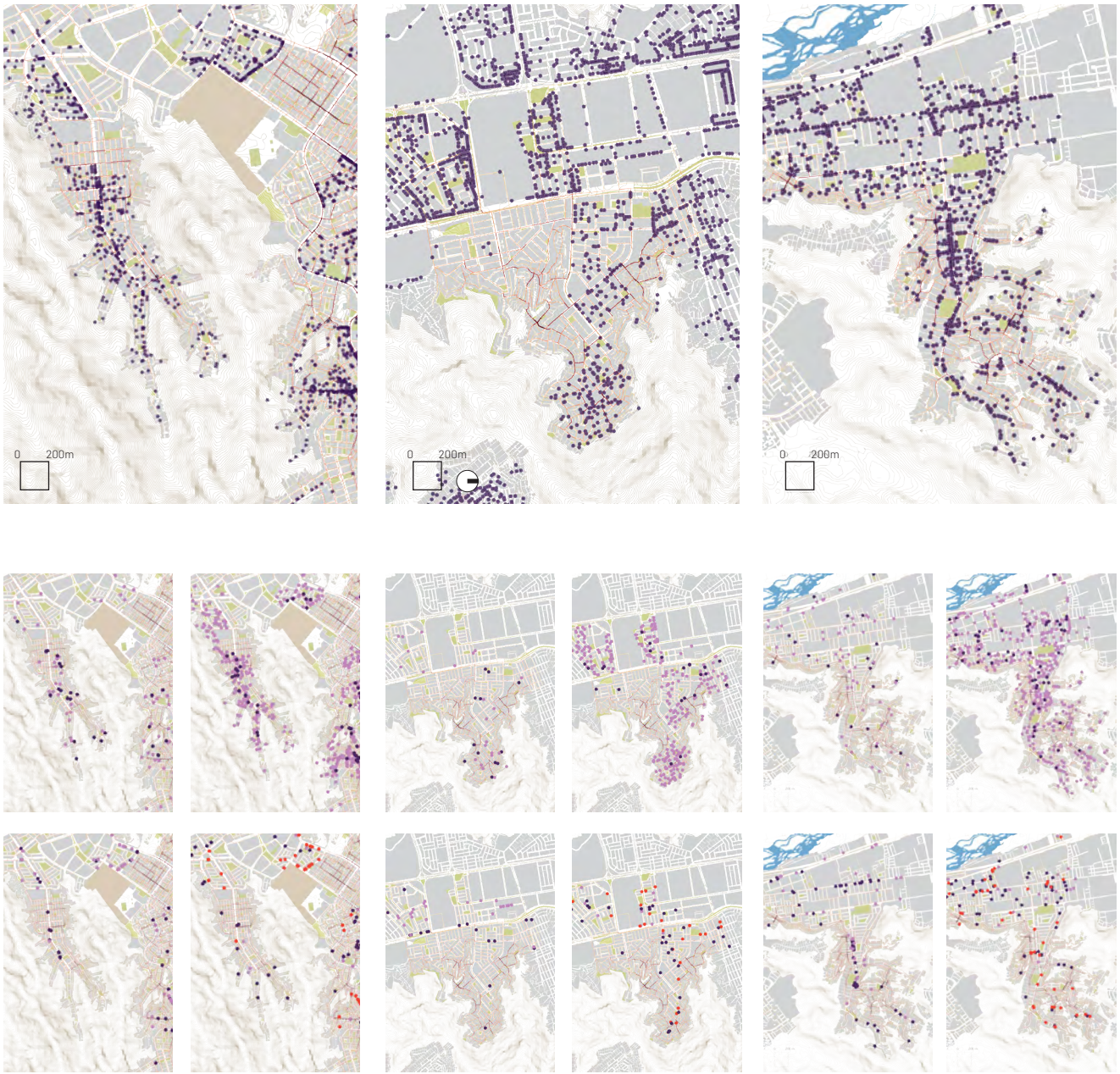


FIG. 11.1 (1-15, from left to right and top to bottom) Location of activities in three settlements. Data from INEI, 2017 (not published). Developed by the author. Data

The list is visualized on maps. Firstly, all activities are seen together to understand which are the areas inside the three cases with the highest intensity of activities (fig. 11.2-1 to 3). Secondly, recurrent groups or clusters of activities are detected, such as schools and bookshops, or hardware shops and car repair shops (fig. 11.2-4 to 15). These clusters will be observed in detail in the next sub-chapters.

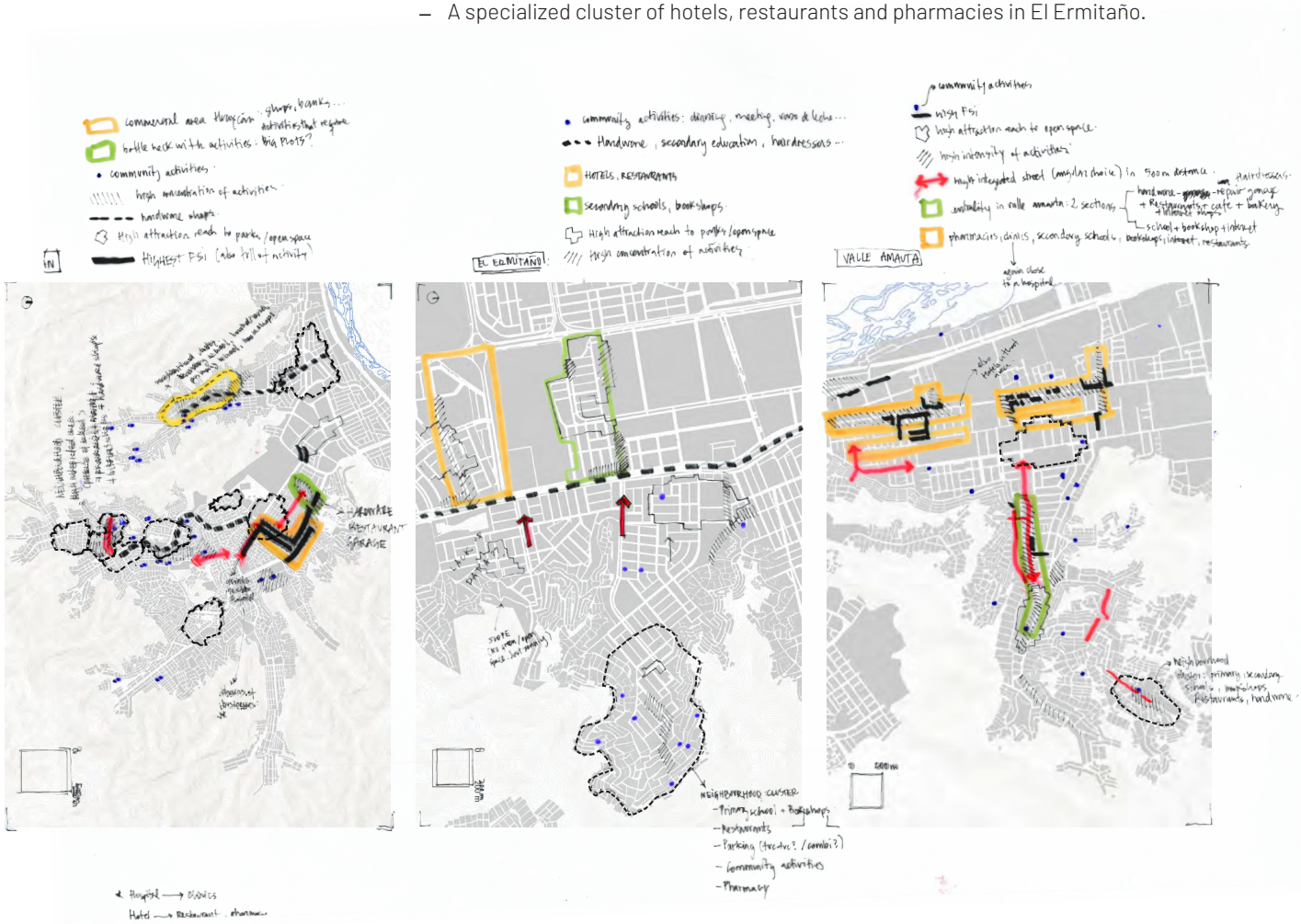
11.2 – **Activity clusters and spatial dynamics**

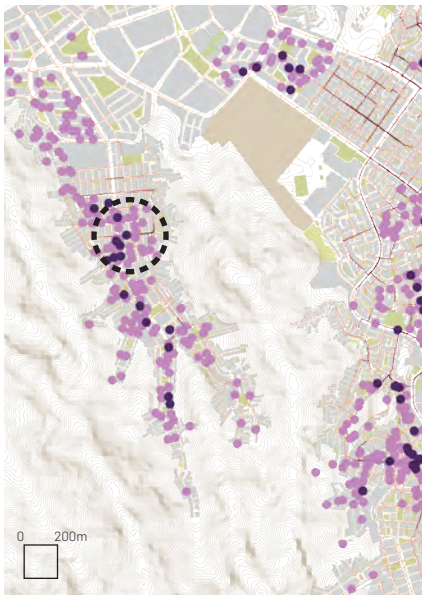
FIG. 11.2 Overlapping of activities and spatial outcomes on tracing paper. Data from INEI, 2017 (not published). Developed by the author.

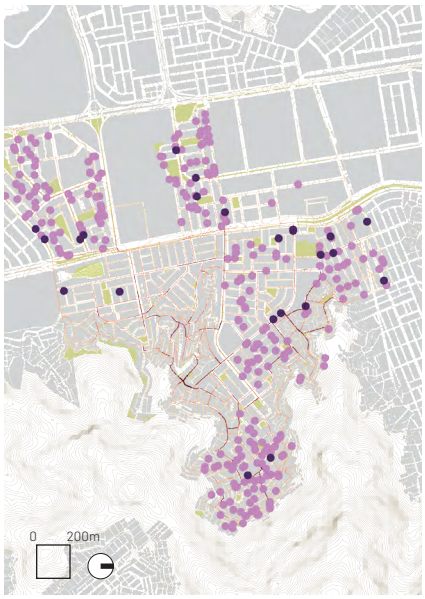
A quick overlapping of the maps showing different activities shows already how some activities have a close relationship with others and how they take place in specific areas in space. Activities analyses are combined with previous analysis on spatial characteristics: Access to open space, size of plots, spatial integration of the street network and floor space index. A quick exercise is carried out with tracing paper in order to identify potential areas to be analysed in greater detail. The selected areas are representative of clusters of activities+spatial characteristics that take place in all three cases.

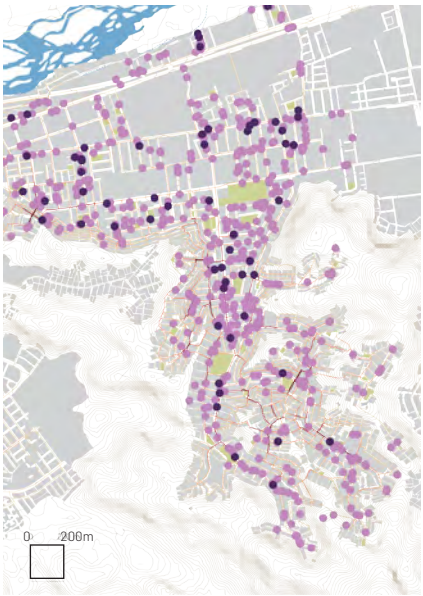
Five clusters are identified and analysed in bigger detail:

- Activities that are evenly distributed over the whole area of the three cases, such as corner shops and internet shops.
- Hardware shops and car repair shops in high globally integrated streets
- Primary, secondary schools and bookshops in high locally integrated streets of low-consolidated areas.
- Community centres and churches in low-integrated low-consolidated areas.
- A specialized cluster of hotels, restaurants and pharmacies in El Ermitaño.









Cluster of activities 01

- Internet shops
- Corner shops
- Studied cluster

Evenly distributed activities: Corner shops and internet shops

There are some activities that are evenly distributed on the territory. There are, apparently, no specific spatial characteristics required for them to take place, such as an specific plot size or proximity to an open space or a high integrated street (fig. 11.10-1). The most extreme cases are corner shops and to some extent also internet shops, but there are other activities that are also evenly distributed over the territory, such as pharmacies and, partially, small cafés and juice shops. In the flat areas of Horacio Zevallos (the area next to Huaycán), corner and internet shops are placed in 150sqm plots (fig. 11.10-3), whereas in the flat areas of Valle Amauta they are located in 120sqm plots, or in the slopes of both cases they can be seen in smaller plots. These activities usually coexist with residential uses and don't use extensively all the surface of the plot (fig. 11.6 and 11.8). They usually constitute a private business of the people living there to obtain a regular income.

In the case of corner shops, they are the main way to purchase everyday goods, packed and sometimes fresh food. There are not big supermarkets in any of the three cases. Food is usually bought in local or small markets in high integrated areas (fig. 11.9) or these small corner shops. Internet shops are often a meeting point for young people, offering complementary services, such as printing or copying documents.

In many cases, nevertheless, the floor space index of plots in which these activities take place is within medium to high ranges (fig. 11.10-2). In one of the cases that is observed with google street view (fig. 11.8) the second floor has extra rooms for rent (fig. 8-2). This, of course, does not allow us to generalize, but these rooms are probably in the informal rent market that takes place in consolidated areas (chapters 8 and 9).

FIG. 11.3 (previous page top) Location of corner shops and internet shops in the three cases. Street network shows local integration analysis. PST analysis developed by author. Activity data source: INEI, 2017 (not published). Map developed by the author.

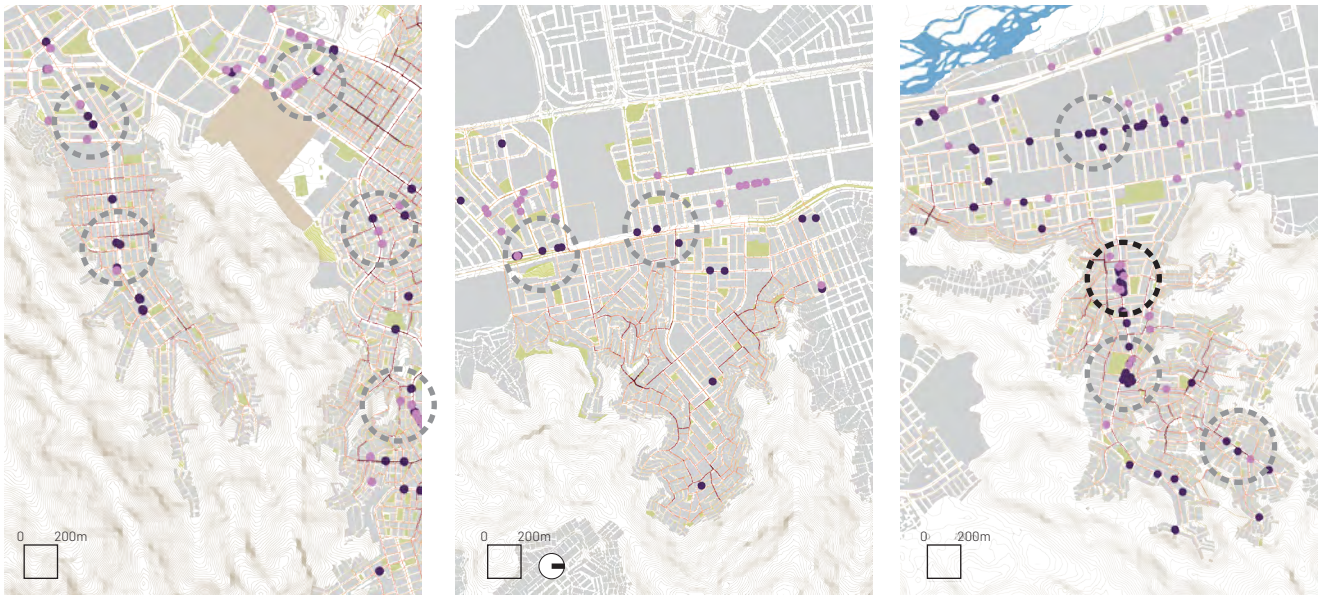
FIG. 11.4 (previous page) corner shop in selected cluster in Horacio Zevallos. Source: Google street view, 2019

FIG. 11.5 (top) Corner shop in selected cluster in Horacio Zevallos. Source: Google street view, 2019

FIG. 11.6 (middle left) Internet shop and in selected cluster in Horacio Zevallos. Source: Google street view, 2019

FIG. 11.7 (middle right) Small markets in high integrated areas close to open space. Source: Google street view, 2019

FIG. 11.8 (bottom) (1) Local integration, (2) FSI and (3) plot size analysis with location of corner shops and internet shops in Horacio Zevallos. Developed by the author.



Cluster of activities 02

- Hardware shops
- Car repair shops
- Studied cluster
- Other similar clusters

Hardware shops and car repair shops in high globally integrated streets

High integrated streets on the settlement scale create the conditions for specific activities to take place. These areas have streets that are well integrated with the overall structure (PST analysis is carried out on a 3km range)(fig. 11.14-1 zoom-in of the analysis), and they are therefore well connected to the car or *moto-taxi*[1] networks. Hardware shops and car repair shops are often densely located on these streets, especially in the cases of Valle Amauta and Huaycán.

Many of these streets, besides being highly integrated, are close to the services and open spaces that are located in semi-flat areas. They have also big size plots (150 to 200sqm)(fig. 11.14-3), which are often fully occupied for the sale of construction and hardware material, or the reparation of cars, on the ground floor. These activities sometimes exceed the private space, using part of the public space on the street, especially in places where there are not sidewalks (fig 11.12 and 11.13).

There are several reasons that explain the high FSI values in these streets. On the one hand, their integration on the settlement scale and their position close to services and open space, increase property value. On the other, activities such as hardware shops are highly profitable in an environment where most of the houses are built progressively in time. That is probably why in the case of El Ermitaño, which is nowadays more consolidated, hardware shops seem to follow a different logic (fig. 11.11-2). In the case of car repair shops, *moto-taxis* are a very common transportation mean to access the slopes and low-integrated areas. Therefore, *moto-taxi* related services, such as car repair shops are also very profitable in these areas. It is a popular say that for these reasons (and others that will be explained later), hotels and hardware shops are always the highest building in the settlement (fig. 11.13).

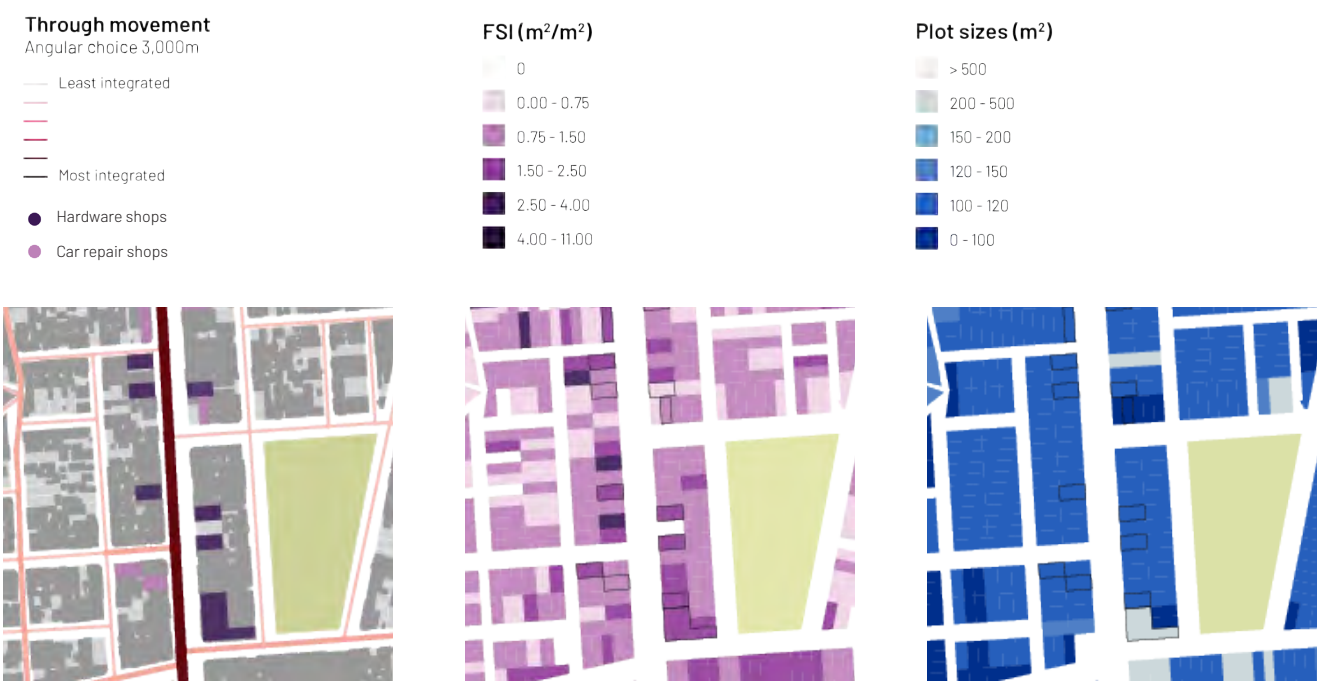
1 Moto-taxis are three wheeled motorcycles that can carry passengers on a back seat. They are called *tuc-tuc* in other countries.

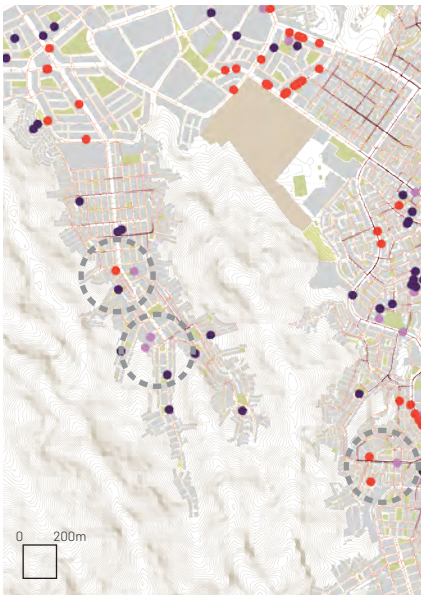
FIG. 11.9 (previous page top) Location of hardware and car repair shops in three cases. Street network shows local integration analysis. PST analysis developed by author. Activity data source: INEI, 2017 (not published). Map developed by the author.

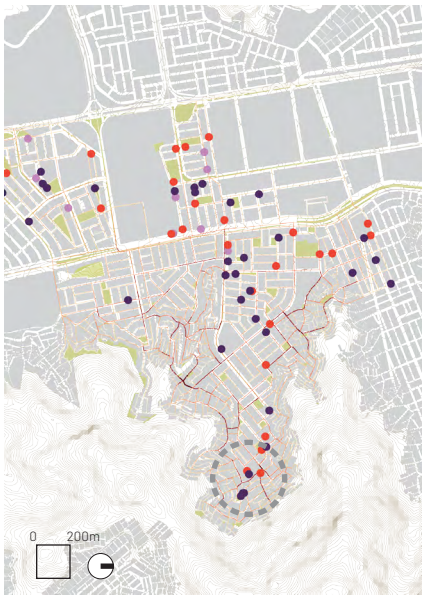
FIG. 11.10 (previous page middle) (1) Hardware shop cluster in Esperanza Avenue (Valle Amauta) (2) Car repair shop and hardware shop in Esperanza Avenue (Valle Amauta). Source: Google street view, 2019.

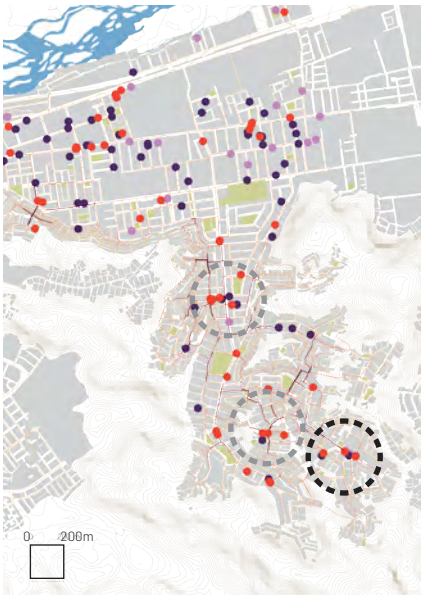
FIG. 11.11 (top) Hardware shop in Esperanza Av. in Valle Amauta. The building of the shop is clearly higher than its neighbours. Source: Google street view, 2019.

FIG. 11.12 (bottom) (1) Through movement (angular choice with 3,000m distance), (2) FSI and (3) plot size analysis with location of hardware shops and car repair shops in Esperanza Avenue core area (Valle Amauta). Developed by the author.









Cluster of activities 03

- Basic and Primary schools
- Secondary schools
- Bookshops
- Studied cluster
- Other similar clusters

Primary, secondary schools and bookshops in local integrated streets of low-consolidated areas

In low consolidated areas, intensity of use is more concentrated than in semi-flat consolidated high-integrated areas. In low consolidated areas there is not a high value of the land, activities are less connected with economic profit and more related to social or cultural uses, such as education. Schools are a very intense meeting point (fig. 11.18) and create a specific clustering of activities.

Big public schools are located on high local integrated streets (analysis is carried out for 500m walking distance) (fig. 11.18-1) and on big plots (fig. 11.18-3). These big plots were left as space provision for public facilities in settlements on semi-flat areas. They are often located close to the fracture-line (Municipality of Lima, 2013b) (chapters 4 and 9), where the settlements on the steep slopes begin. Floor space index in these areas stays within low values (fig. 11.18-2), partly because they were usually more recently developed, especially the settlements on the slopes. It could be said that schools are a potential meeting points for people living on the slopes and people living in semi-flat areas. Nevertheless, the time of this research is limited and there is not enough data to affirm that schools *are* actually a meeting point. It would be interesting to carry out a more in-detail study in order to analyse the social configuration of the students in this type of centres and understand whether schools are actually a space in which different socio-economic groups meet.

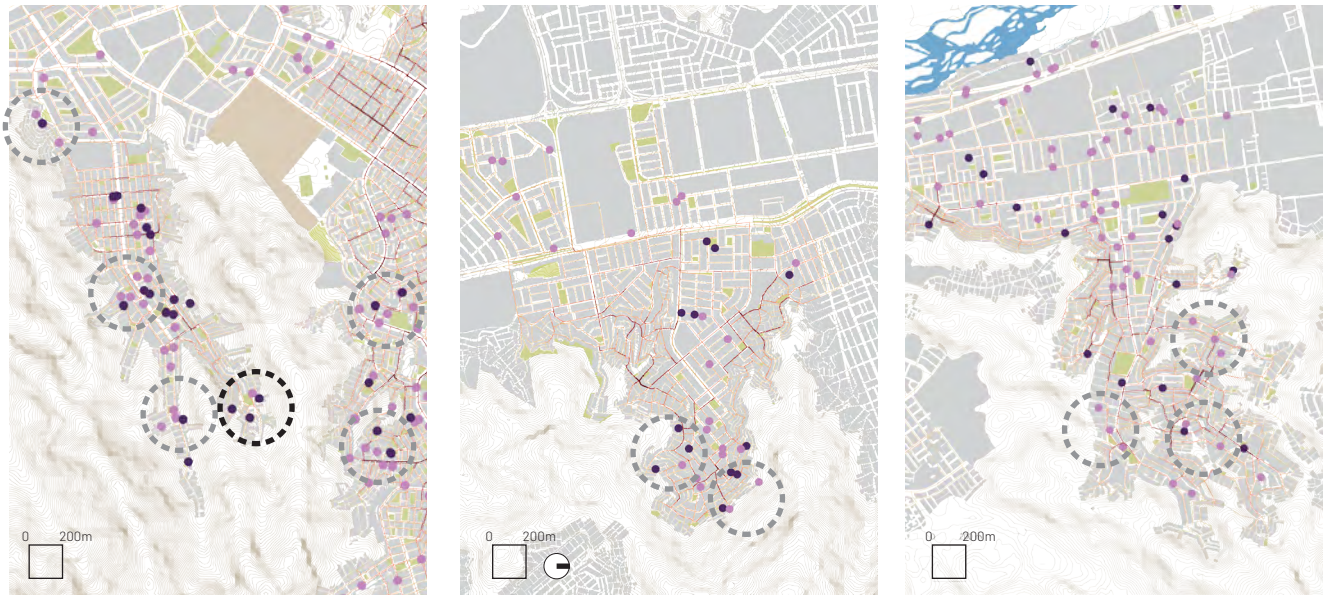
Other activities clustered around schools are bookshops (fig. 11.16-1), copy shops and other education facilities, such as kindergartens or basic and primary schools. In the zoom-in case, a children's labour association, called Manthoc, also has a small office next to the secondary school. One block away, next to an open space with a sport field, there is also a small informal market, where comics and magazines, but also fruits and snacks are sold (fig. 11.16-2).

FIG. 11.13 (previous page top) Location of secondary schools, primary and basic schools and bookshops in three cases. Street network shows local integration analysis. PST analysis developed by author. Activity data source: INEI, 2017 (not published). Map developed by the author.

FIG. 11.14 (previous page middle) (1) Secondary - Primary school cluster in Valle Amauta. (2) Street vendors appear in school clusters, close to open space (sport field). Source: Google street view, 2019.

FIG. 11.15 (top) Secondary and primary school together in Valle Amauta. Small private vans (used also for public transportation) parked at the entrance. Source: Google street view, 2019.

FIG. 11.16 (bottom) (1) Local integration, (2) FSI and (3) plot size analysis with location of schools (primary and secondary) and bookshops in Valle Amauta. Developed by the author.



Cluster of activities 04

- Community centers: comedor, vaso de leche, meeting room
- Churches
- Studied cluster
- Other similar clusters

FIG. 11.17 (top) Location of schools, bookshops and community centres in three cases. Street network shows local integration analysis. PST analysis developed by author. Activity data source: INEI, 2017 (not published). Map developed by the author.

Community centres and churches in low-integrated low-consolidated areas

The steep slopes of the three cases have low-consolidated settlements (FSI index shows very low values fig. 11.21-2) that are also low-integrated (analysis on walking distance (500m) (fig. 11.21-1), settlement scale (3,000m) and global metropolitan integration (15km) all return low values). This is mainly due to their lack of accessibility and the structure of the street network[1].

The intensity and types of activities that take place in these areas is very different to the previous clusters. Besides the presence of corner shops, most of the activities found in these areas are related to collective practices: churches and community activities (meeting rooms, *vaso de leche* or *comedores populares*).

The spaces used by these activities don't differ from those used for residential activities (The white building is a church in fig. 11.20.). These functions don't seem to follow a specific logic regarding plot sizes and their location (fig. 11.21-3). The only one which is located in a big plot close to an open space is the meeting room of the settlement in the South (fig. 11.21-1) and, when seen its FSI, we can see the space is there but nothing has been built yet. It is quite frequent in low-consolidated areas that the space for an activity (a meeting room or a kindergarten) is kept, but there haven't been resources allocated to build anything on it. This provision of spaces is kept by the different settlements (see borders of settlements in fig. 11.21-1)

1 PST analysis is carried out without considering the slope gradient. Some calculations were tested using different GIS functions and, even though they returned interesting values, they demanded too much time and complex function sequences. Due to the limited time of this graduation thesis, PST calculations considering the slope gradient could be part of further research.

FIG. 11.18 (top) Church on the slopes of a low consolidated area in Horacio Zevallos. Source: Google street view, 2019.

FIG. 11.19 (bottom) (1) Local integration, (2) FSI and (3) plot size analysis with location of corner shops and internet shops in Horacio Zevallos. Developed by the author.

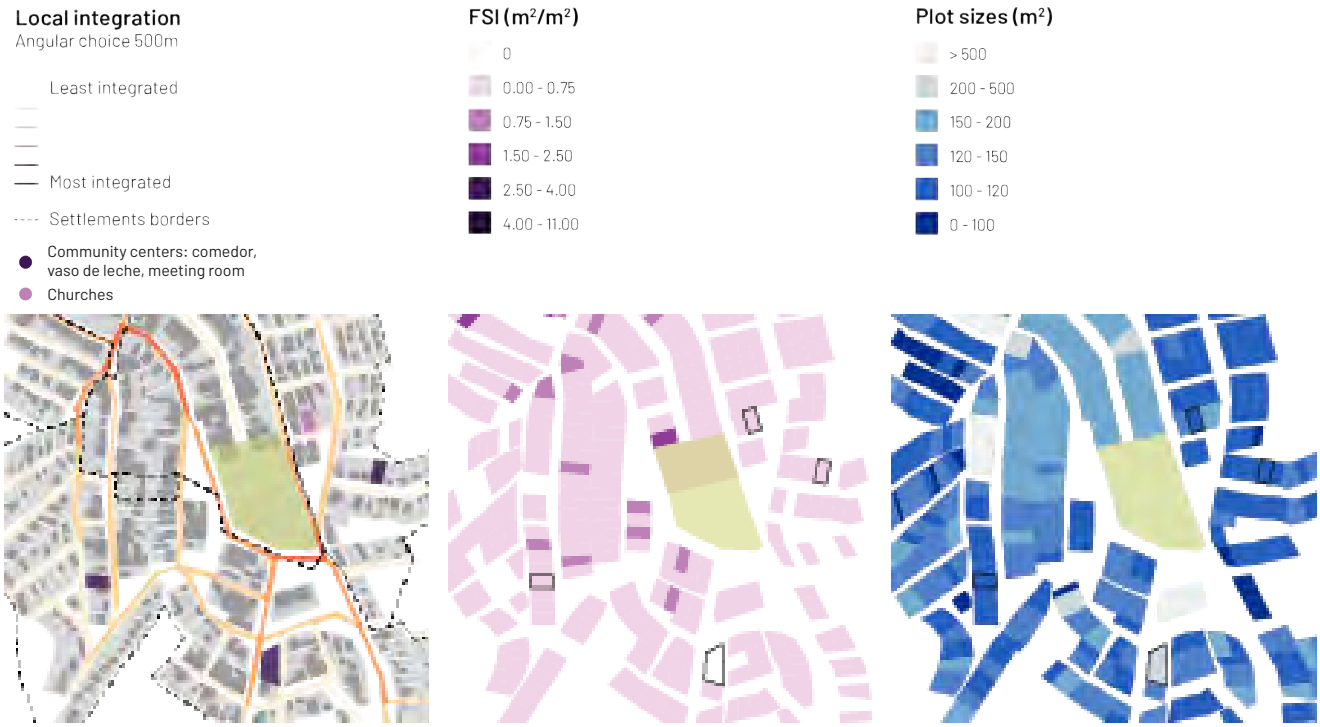


FIG. 11.20 *Faena* (collective work) organized to do construction work in a secondary school in Huaycán. Specific activities, often related to the community, such as schools, community centres or churches, are clustered in low-consolidated areas. Collective practices, such as *faena*, usually related with community centres or collective works in the public space, are also implemented in other spaces of the cluster, such as a school. Picture by the author, 2017.

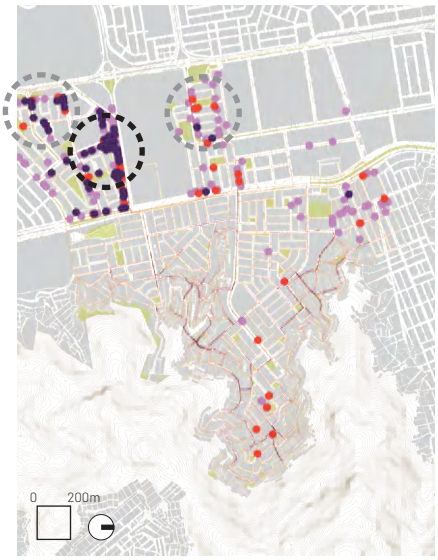


FIG. 11.21 (top) Location of hotels restaurants and pharmacies in the area of El Ermitaño. Street network shows local integration analysis. PST analysis developed by author. Activity data source: INEI, 2017 (not published). Map developed by the author.

FIG. 11.22 (middle)(1) high integrated wide avenues next to big commercial or industrial plots. (2) Hotels attract other business, such as pharmacies. Source: Google street view, 2019

FIG. 11.23 (bottom)(1) Global integration and (2) plot size analysis in areas with hotels, restaurants and pharmacies in El Ermitaño, Independencia. Developed by the author.

Specialized clusters: Hotels, restaurants and pharmacies close to El Ermitaño, in Independencia district

Clusters of activities do not have the same characteristics in all three cases. There are some specialized activities that take place in specific areas of the city. This is the case of a hotel cluster in Independencia district, in the area studied for El Ermitaño.

The former agriculture land, owned by Nicolini family (chapter 7) was later developed as an industrial site and is now being partially redeveloped into big scale commercial areas and residential neighbourhoods. In one of these residential areas there is a high concentration of hotels. These are developed on big plots, next to even bigger plots (fig. 11.24-2) located on high integrated streets on the metropolitan scale (darkest red line in fig. 11.24-1).

Young couples in Lima often become independent when they get married and hotels are the most popular location for them to have sex while they still live at their parents place. Big and high-integrated avenues (fig. 11.22-1) in the metropolitan scale but with low values on local integration (no one would walk in these areas from El Ermitaño or other close-by neighbourhoods) and big blocks with low street activity provide the urban anonymity needed for the activities carried out in the hotels.

Hotels, at the same time, cluster around them other activities, such as restaurants or pharmacies (fig. 11.22-2). The specialization of this cluster of activities creates a centrality in the city scale. This area of Lima is well know for the abundance of hotels and is quite popular in the North of the city.

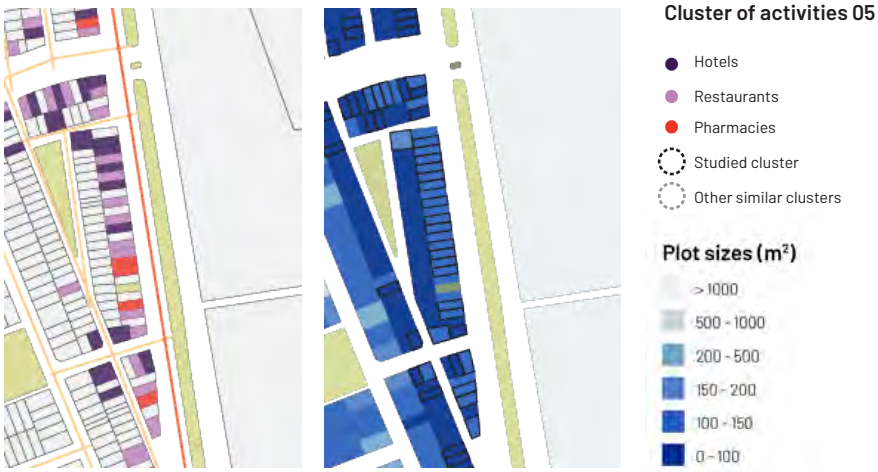


FIG. 11.24 (left) Potential for collectivity in Valle Amauta. Developed by the author.

FIG. 11.25 (right) Potential open space network in Valle Amauta. Developed by the author

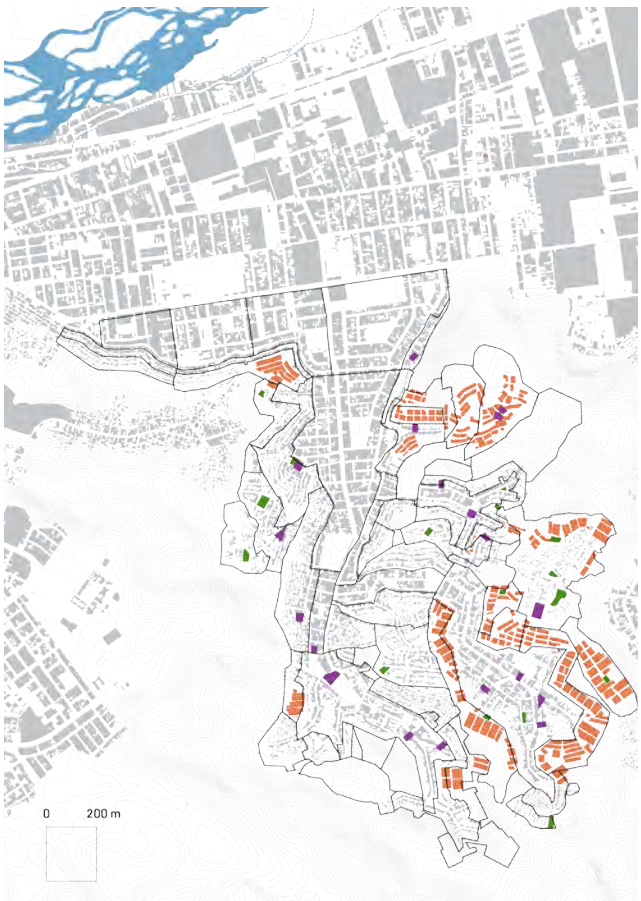
FIG. 11.26 (next page) Centralities in Valle Amauta according to activity clusters. Developed by the author.

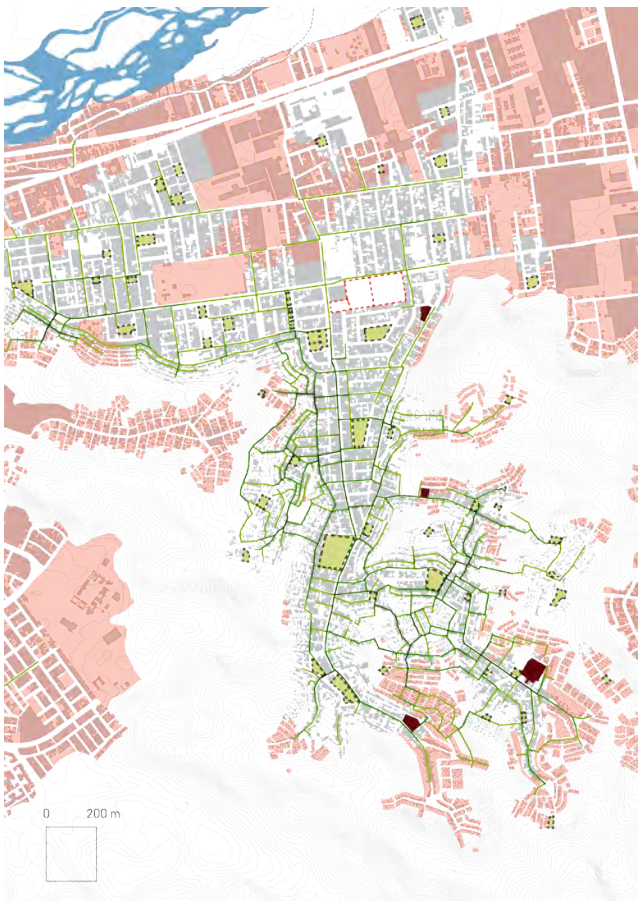
11.3 – **Ordinary Lima: Valle Amauta**

Even though, lessons are extracted from the three locations, Valle Amauta is used to exemplify in space some conclusions drawn from the analysis in this chapter.

– Collectivity potential: In low-consolidated low-integrated areas, there is spatial potential linked to collective practices. Churches, mainly evangelic, are located in these areas, and there is space provision for community rooms or "survival activities". Even though these activities can be adapted to multiple spaces, they can benefit from collective uses and open space next to them. Besides, evenly-distributed every-day small-scale activities create potential for a permanent individual income and, therefore, a surplus that is often re-invested to improve one´s material situation.

– Open space potential: Accessible and integrated open space creates potential for the strangers and the different to meet. In high local integrated areas closed to the topographic fracture line, schools have potential to become meeting places and attract small economic activities. When combined with open spaces, they have potential to become neighbourhood centralities. A potential network of open spaces should consider as well these activities.





– Centrality structure: Highly profitable private economic activity feeds back from the spatial characteristics in high integrated areas, creating centrality on a medium scale (2-3km radius). These activities benefit as well from spatial extensions of the private space both on the public area (street) and in the private plot (vertical growth) . Even though this creates a potential for the increase of the land value, the introduction of new functions and potential centralities, it also creates conflicts with other potential activities. Schools have potential to create centrality in the local scale. Specialized clusters and the collaboration of similar businesses´ interests can create centrality in the metropolitan scale.

12 – Multiscalar analysis reflection

El Ermitaño, Huaycán and Valle Amauta

In this final chapter of the multi-scalar analysis, some conclusions are put forward in order to inform the next steps of the graduation project. Due to time and efforts limitations, these conclusions may oversimplify important matters, draw shallow connections between complex concepts as well as leave big temporal gaps between the cases that are presented. It may be object of further research to fill in these gaps and give more depth to the concepts and elements analysed in this work. For now, the reflection of the analysis will be developed from the three study areas and the four moments in time.

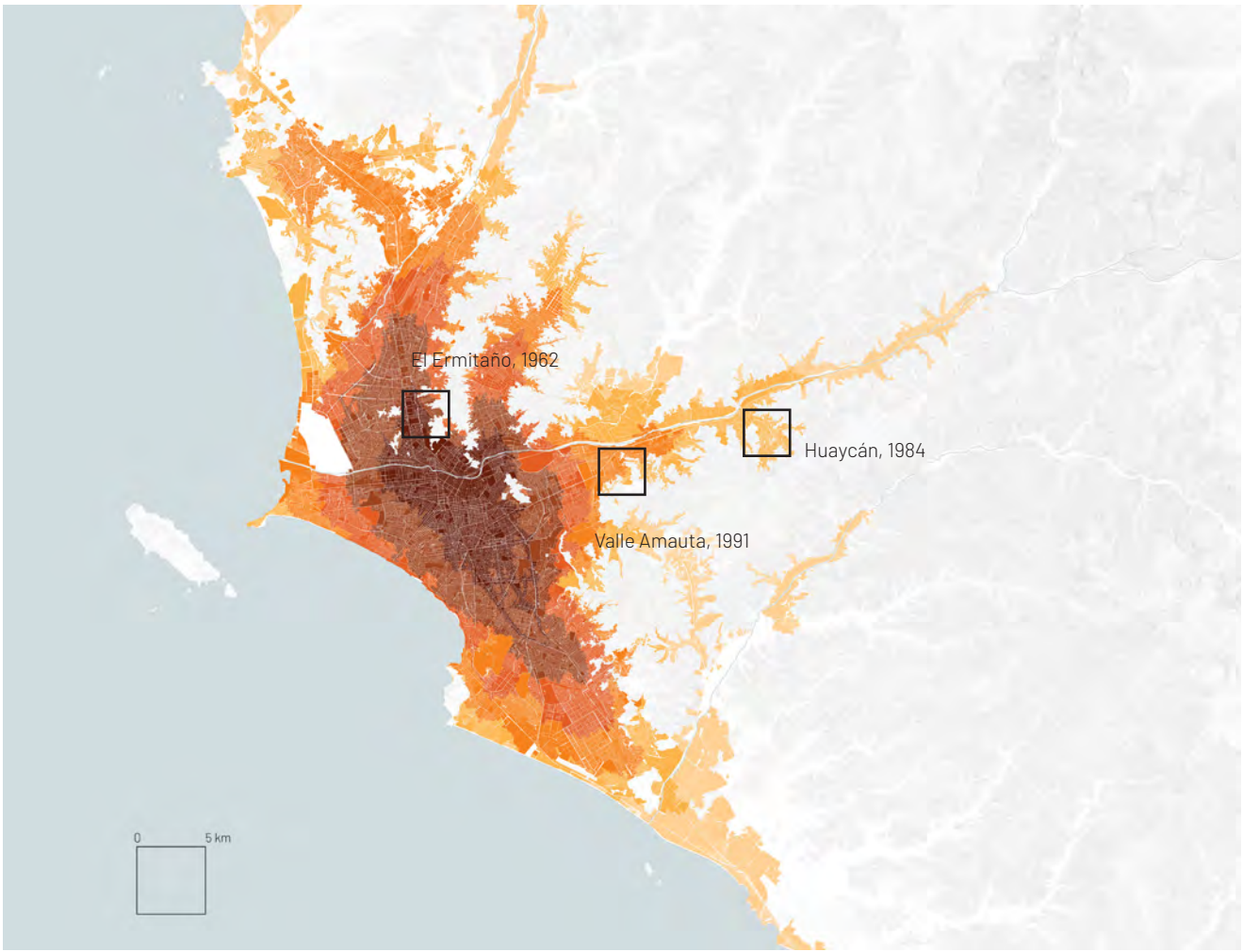


FIG. 12.1 Global integration in Metropolitan Lima. Attraction reach calculated with a distance of 15km. Street network and PST analysis developed by the author. Block base from Municipality of Lima, 2013a.

There are several conclusions that can be extracted from the analysis. Some may explain more in detail the complexity of the reproduction of socio-spatial segregation in Lima or the specificities of housing policies put in place in some of Lima's *barriadas*. The intention of the analysis in this graduation project is nevertheless to inform the proposal. Therefore, the conclusions mentioned in this reflection focus on potential ideas that are the starting point of the work developed in the next part of the report.

First of all, the three analysed examples showcase the strong correlation between housing policies, city development and socio-spatial segregation. The decisions made on the government level on housing and land regulations (or deregulations), influenced by the control of the space, and specifically the land, had a huge impact on the resulting city model of Lima.

The city of Lima has gone from a situation in which most of the land was controlled by a small group of owners to another in which that control over the land, already developed, is rather fragmented. Former peripheral land, such as the one in El

Ermitaño, is now in high integrated areas (fig. 12.1). Control of the land in there is fragmented or distributed among small private owners. This, despite making redevelopments more difficult due to the need to negotiate intensively with more people, also allows for different schemes of urban developments, stakeholders and diverse spaces where they can take place. It will be important to remember, though, that housing developers and real state companies are nowadays a continuation of the businesses created by the few families who owned the land in the past (this is very well exemplified by Julio Calderón (2016:118) for the Brescia family). Since open land in the periphery is either scarce or far away from any centrality, these companies have nevertheless to purchase land to redevelop. Their economic weigh and power makes their interests still very influential in housing policies and projects.

Secondly, housing policies and developments have an impact on many other aspects of life that go beyond housing. They foster social organization: the correlation between urban and social structure in Huaycán influenced the pace of the development. It also determined the potential for meeting spaces, such as the community centres and an even distribution of open space. This, at the same time, supported the development of "survival activities", such as *comedores populares* or *vasos de leche*. Housing policies influence also economic structures: informal rents on expansions are a permanent income for many families in areas like Huaycán or El Ermitaño, the location of public spaces on the urban structures influenced where businesses appeared in Valle Amauta and the illegal land market is one of the bigger economic activities in the city of Lima, involving many actors and networks who legal and illegally benefit from it. Housing is not only the house. Understanding housing as a process opens a great potential to act differently and develop alternative ways of urban development that my be linked with existing activities and clusters of activities.

Thirdly, neither of the three cases is a homogeneous territory. The same way socio-spatial segregation has changed from a dichotomy centre - periphery to a graduated pattern, what was considered the "periphery" cannot longer be seen as one similar area. Following Jennifer Robinson´s (2006) "ordinary cities" approach, the analysis consequently shows there are different dynamics in different areas of the three cases that are not part of a linear structure of development (from informal to formal, from poor to less poor): organization fluctuates according to the existence of collective needs, low-income population access housing at the same time through informal rent apartments in high integrated areas or buying land in the illegal land market, or Mi Vivienda housing projects (gated communities) coexist with single-family developments in low-areas for middle-low income population. Centralities have different characteristics and do not necessarily follow the same pattern in all areas. The proposal needs to develop diverse strategies and designs that consider the stakeholder and spatial characteristics of each of these areas. This would foster and preserve existing diversity.

Fourthly, a very important question regarding global integration remained in the background of the analysis. How to achieve equitable access to services and amenities when some areas, like Huaycán, were developed 14km away from central Lima (fig. 12.1)? Despite some metropolitan centralities existing nowadays in the East valley of the city (Santa Clara or Ceres), achieving equity seems difficult without a more polycentric distribution of centralities. On the one hand, this may involve a

broader vision of the city that goes beyond what can be done in the neighbourhood scale. Therefore, the proposal must reflect on this on the metropolitan scale. On the other, there are elements on the small scale or the settlement scale that can foster access by increasing integration. For example, in all three cases, the private control of the land and the development of the neighbourhoods on public non-productive light slopes, defined a bottle neck structure that separates the three areas from the linear structures that connect to the rest of the city (Túpac Amaru avenue in the case of El Ermitaño and the Central Road in the case of Huaycán and Valle Amauta). Opening this bottle neck through networks of integrated open spaces (streets or meeting areas) will be key to increase accessibility and integration of the system as a whole, providing potential for polycentricity in the small scale.

Even though housing, especially if we understand housing beyond the house, influences the appearance of centrality, there are other factors, such as economy, territorial administration, governance, work, transportation, etc. that influence whether the spatial structure of Lima may become more or less polycentric. This graduation thesis will approach the problem through the lens of housing (as a process), but it is known to the author that this approach is not enough and needs to be complemented with other aspects.

Lastly, there are several elements that appeared during the analysis that must become key in the definition of the proposals. For example, there is a clear correlation between size of the plots and density in any kind of single-family development. The smaller the plot, the higher the density. The higher the density, the more probable that businesses appear. Density provides street life, which is good for economic opportunities, but also provides a more fair share of the responsibilities and costs of services. Density is related also with open spaces. In PREVI the competition proposals explored this by designing car-free, and therefore, smaller open spaces. Therefore, density can be achieved through many means (vertical development, smaller plots, less open space). In the proposal, strategies must include defined variables, such as density, and designs may show different ways of achieving them. On the one hand, specific spatial "rules", as in the case of the UCV in Huaycán, must secure that the outcome is fair in relation to an equitable distribution. On the other hand, urban development (or redevelopment) process would be more democratic if stakeholders who live in the area make the decisions that shape their own living environment. Open designs must define the expected outcomes but must also allow for freedom on how to reach them. This scheme could be applied to other key factors, such as the integration of open spaces, the existence of economic activities, the potential space for collective activities and the socioeconomic mix.

In this graduation project, the expected outcomes (such a density) will be defined according to the analysis. Nevertheless, in any environment outside academia, the question on how to define the expected outcomes still remains. Even if some decisions are made top-down, whether they are shared and discussed may decrease the gap between rationalities in contexts of deep difference (Watson, 2006).

PART 4

Proposal

Valle Amauta

Characterization of intervention areas / Spatial strategies and process designs

"This is perhaps the dilemma of many policy epistemologies (...). They each require working through rather than against institutions of power — be it the market, or the state of exception, or supranational organizations that supersede national sovereignties. Is it possible to be subversive when there is such complicity with the system? This is a question that planning has long struggled with and that cannot be fully resolved. The master's tools cannot dismantle the master's house, but perhaps when strategically used, they can allow those on the outside to occupy the master's house"

Ananya Roy (2005) "Urban informality: Toward an epistemology of planning", *Journal of the American Planning Association,* 71:2, 147-158

13 – Characterization of intervention areas

Valle Amauta

Drawing from the conclusions of the multi-scalar analysis, a basic characterization is defined for the study case of Valle Amauta. The understanding of clusters of activities or, in other words, the *actions* or *decisions* that shape the urban environment, is used to define three main areas of intervention. These areas are defined through the existing actors and their relationship with their environment, which is in turn shaped by the activities and relationships between the actors (Turner, 1976).

Even though some of the characteristics that define the areas of intervention in Valle Amauta are similar to other places in Lima, this characterization cannot be directly applied to any other case. There are activities, such as the specialized clusters explained for the case of the hotels in El Ermitaño, that can be considered as specific areas of intervention, or activities that shape differently the environment and have not been considered. For this report, only one case is developed. It may be part of further discussion whether and to what extent it is needed to develop this characterization on the other two cases (Huaycán and El Ermitaño) or in any other area in which it is intended to develop a proposal. In any case, the work explained in this graduation project proposes a working method. Intervention areas are based on both the historical analysis and the socio-spatial impact of basic activities that shape the environment.

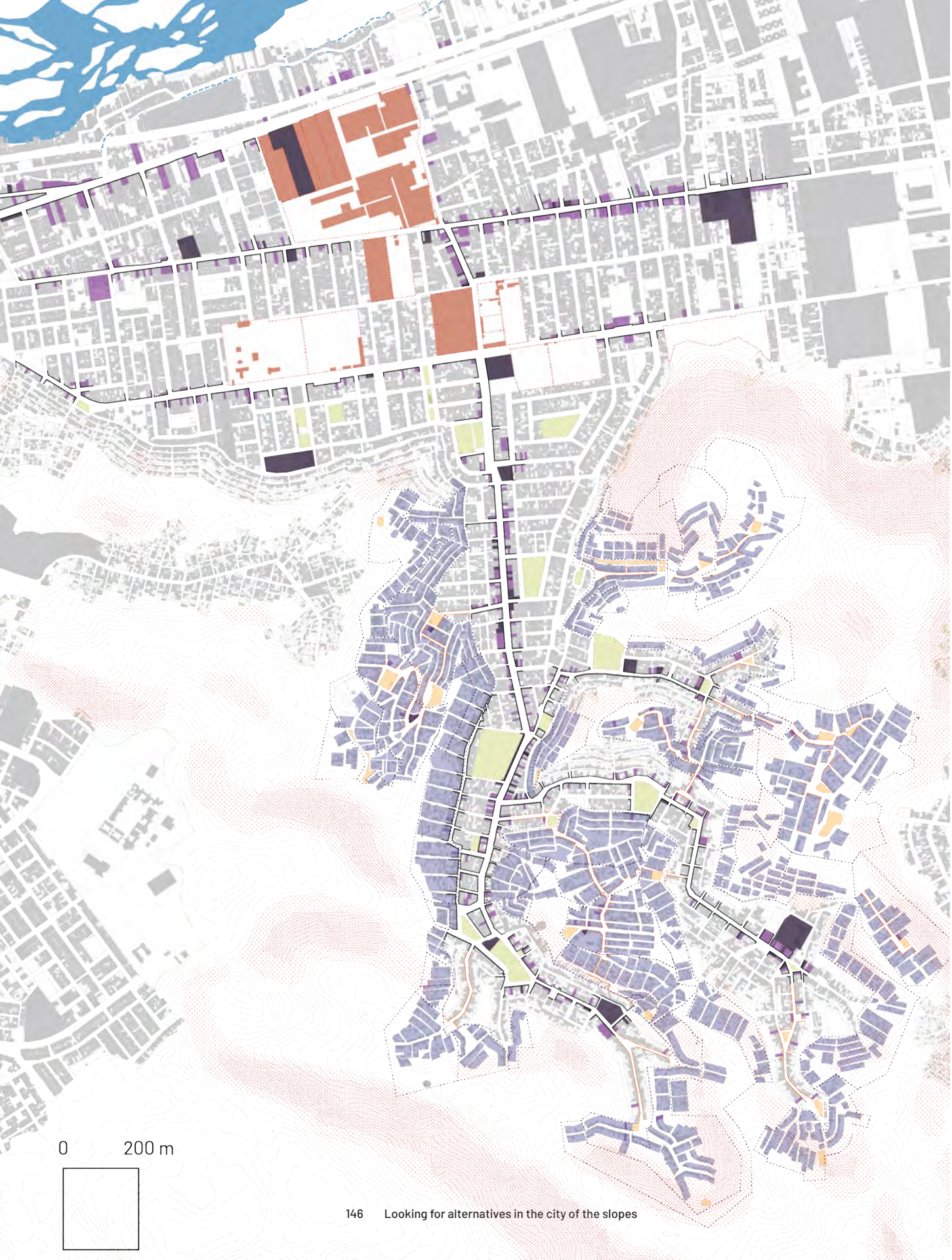

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FIG. 13.1 (previous page) Characterization of areas in Valle Amauta. Developed by the author

FIG. 13.2 (bottom) Characterization of areas in Valle Amauta shown on the cross-section. Developed by the author.

The three areas are characterized according to their spatial features, the stakeholders involved and the clusters of activities that take place.

Intervention area 01: Low-consolidated, low-integrated areas

Often developed on land between 20% and 45% slope gradient (fig. 13.2) by informal land developers. Despite there is space provision for open spaces or public facilities (yellow areas in fig. 13.1), this land is rarely developed and is usually located on very bad quality areas (steep, inaccessible). Plots´ sizes are variable (range from 100 to 150sqm), but the steeper the slopes the smaller the plots are. Accessibility is low and these areas are often connected to medium integrated streets (orange delimited streets in fig. 13.1) by passages with stairs. They often lack public services (water, sewage), there are little material resources and the value of the land is generally low.

These areas are usually organized on neighbourhood associations, which have a delimited settlement area under their management (dashed lines in fig. 13.1). They are registered by the district municipality, even though they do not always have private land tenure and are in different stages of formalization within COFOPRI requirements. Informal land developers operate in these areas, subdividing and selling land. They often do it in collaboration with social leaders that belong to these settlements or to the ones in the semi-flat areas.

The main activities found in these areas are related to every day life (corner shops) or collective practices (churches and "survival activities").

Intervention area 02: High integrated areas in the local and neighbourhood scale

Usually located along streets (dark highlighted in fig. 13.1) on the lower parts of main and secondary valleys, there are also open spaces and public facilities located in these areas. High integrated streets usually have bigger plots (150 to 200sqm) and show already vertical development and higher densities, especially in areas with intense economic activity. Commercial activity, along with local transportation systems (tuc-tucs or small collective vans), often creates conflicts in the use of

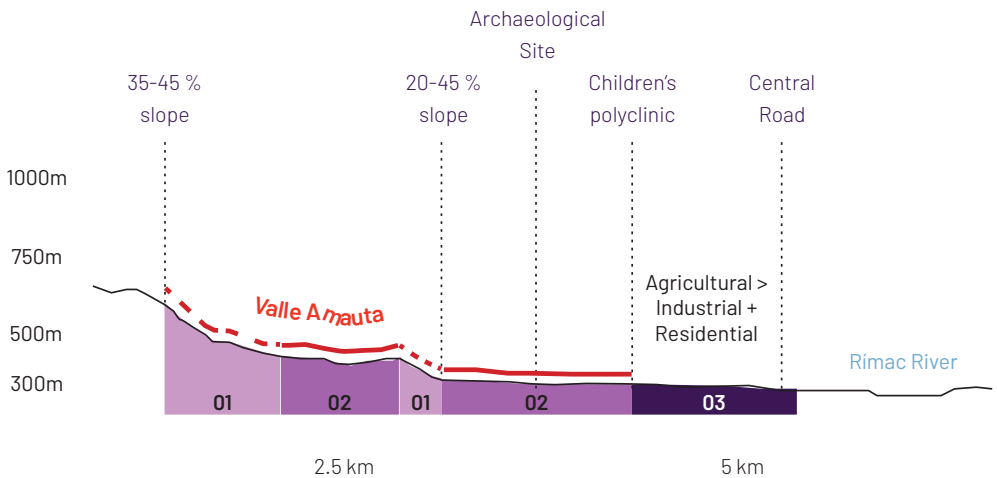













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FIG. 13.3 (1-13, from left to right and top to bottom) Sequence of images from area of intervention 1 to area of intervention 2 and 3. Source: Images 1-4 taken by the author. Images 5-13 google street view, 2019

the public space. There are material resources and land value is higher than in intervention area 01.

There are intense economic activities clustered along the high integrated streets (hardware, car repair shops, restaurants). There are also public facilities, such as schools (big areas in dark purple in fig. 13.1), but they are often located in low-consolidated areas, close to the fracture line (around 20-25% slope gradient).

The main stakeholders in these intervention area are, on the one hand, private businesses, local market associations and private land owners who manage the economic activities, and on the other, public institutions, such as the UGEL (ministry of education), who manages the public schools or the district municipality, who manages open space (parks, streets or sport facilities).

Intervention area 03: High global integrated areas under intense transformation

They are located between the Central Road and Valle Amauta. They were part of the private agricultural land that was later developed into industrial areas and now is being redeveloped into residential areas, often in the form of gated communities (fig. 13.3-11). The blocks and plots are often big (red areas in fig. 13.1), due to the former industrial activities and are often enclosed by a wall that creates a dead street (fig. 13.3-10).

The redevelopment of the industrial blocks is carried out by private housing developers that buy private land. Housing is often implemented under *Mi Vivienda* program that loosens housing regulations to foster housing investments by private developers, such as allowing less parking spaces per apartment (Article 11 DS-N 013-2013) and allowing them to be built on surface space, removing the minimum requirement of 30% open floor index (Articles 12 and 12.3 DS-N 013-2013), or decreasing the land contribution of open public space from 15% to 8% in high density housing developments (Article 7 DS-N 013-2013). These modifications, applied by the Ministry of Housing, are mainly oriented to increase benefits in order to be able to reduce the housing prices. District municipalities also benefit from this redevelopments by the collection of construction permits´payments.

The coexistence of residential areas with gated communities and industrial plots, high integrated streets and areas with high activity intensity are often fragmented or disconnected. There are nevertheless some streets with a high number of car repair shops, restaurants, local markets or commercial streets. Fragmentation and Mi Vivienda housing developments also creates disconnection of the network of open public spaces and areas with low accessibility to open space (fig. 10.8 in chapter 10)

14 – Spatial strategies and process designs

Spatial justice goals become territory-specific

Following the characterization of the intervention areas in Valle Amauta, spatial strategies are proposed for each of them. The strategies are defined according to the work developed in this graduation thesis. Firstly, the characterization of areas of intervention determines the *where*. Secondly, the multi-scalar analysis and the activities that shape the environment, inform *what* is proposed. Finally, the goals of the spatial justice assessment developed in chapter 3 shape the *why*. The designs proposed, draw from all the previous steps to explain *how*.

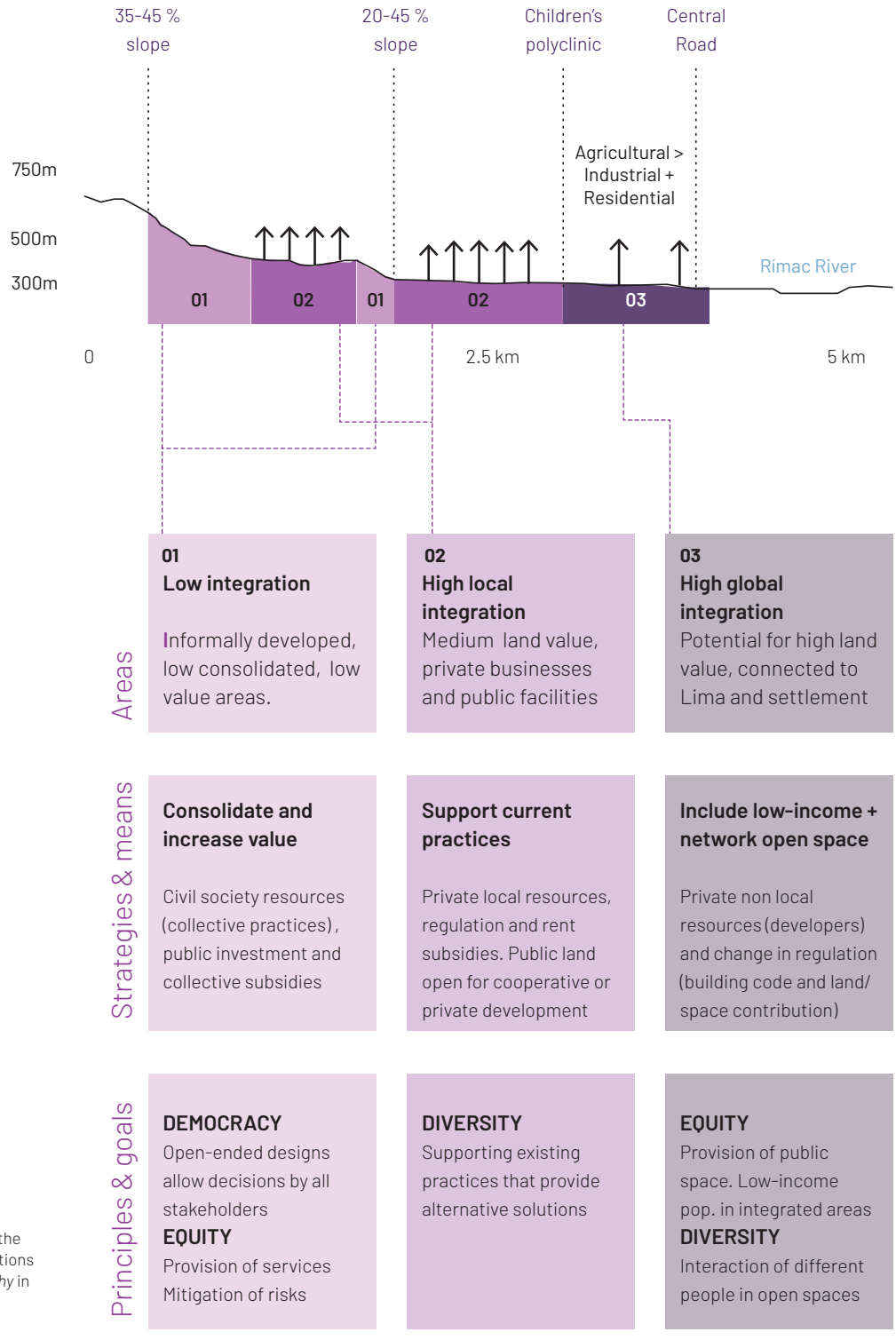


FIG. 14.1 Strategies applied in each of the intervention areas. Vertically, interrelations are shown between *where*, *what* and *why* in each case. Developed by the author.

14.1 – **Spatial Strategies on the cross section**

In chapter 4.4, theory review is used to derive principles that define a fair city. These were:

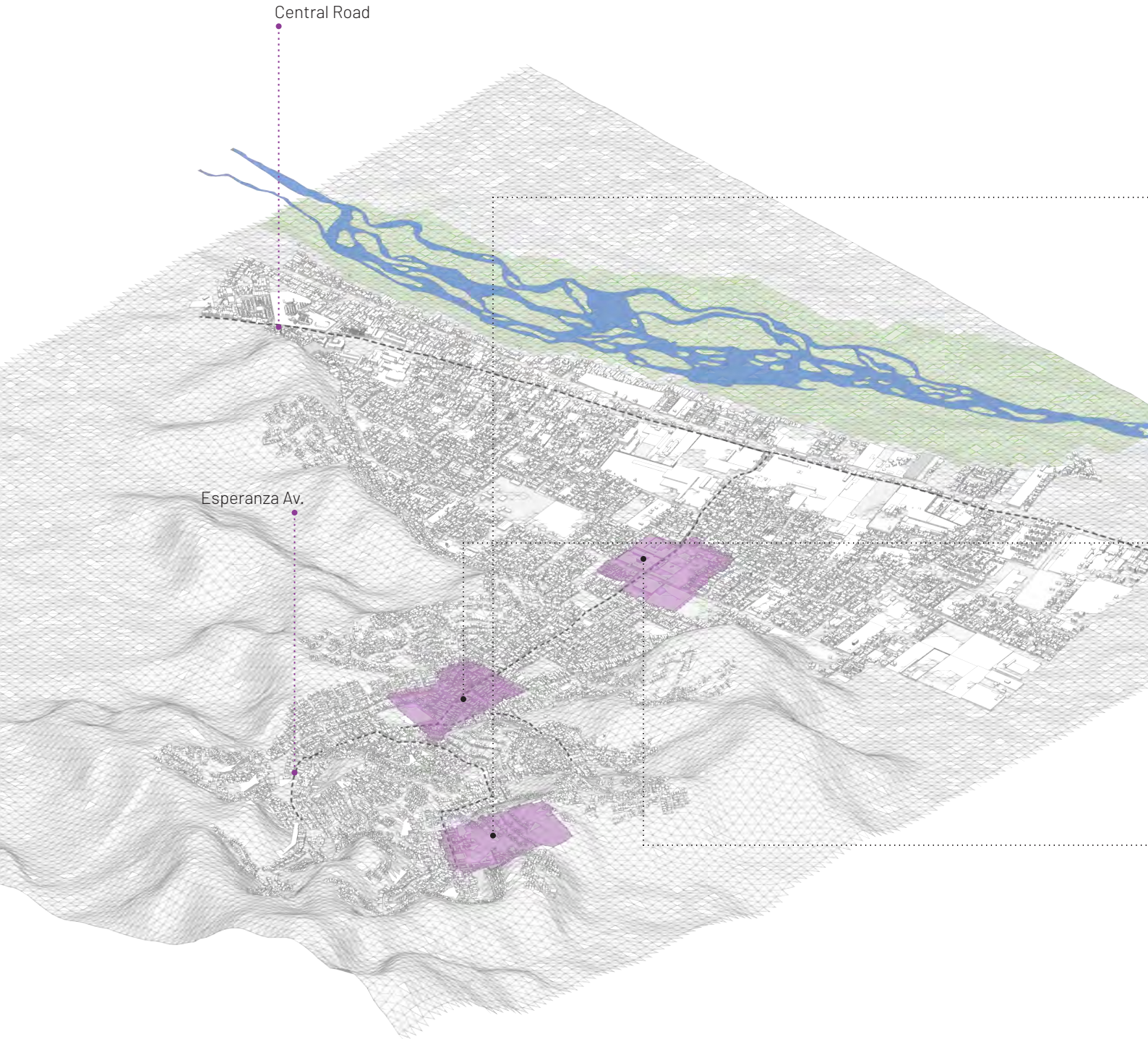
- Dynamics of control and action produce equitable outcomes.
- These dynamics are government by democratic processes in which all actors have voice in the decisions that shape their environment
- Diversity is preserved and fostered by acknowledging structural conflicts, counterbalancing relations of oppression and providing common spaces for the different to meet.

According to the patterns of socio-spatial segregation in Lima (chapter 5.1), the most vulnerable population is usually located on low consolidated areas on the slopes of the periphery, which also have low accessibility and are vulnerable to risks (earthquake and, often, flooding). These areas correspond to the intervention areas 01 and are home to around one million people (Municipality of Lima, 2013a).

Understanding, on the one hand, the city, its services and its potentials as outcomes to be equitably redistributed and, on the other, the impossibility to relocate that amount of population to safer and more integrated areas, the strategies have two main approaches in relation to the first principle: First, to improve the living conditions in intervention area 1 and, second, to open the possibility for low income population to enjoy the services and potentials of areas 2 and 3. The first approach is accomplished through reorganizing public investment and combining it with the resources civil society, while the second one is based on changing the criteria and requirements for existing subsidy systems or housing programs to include low income population in the development process of high integrated areas.

Regarding the second principle, the strategies focus, firstly, on giving voice to the disenfranchised by power structures. The decision making process of urban development is opened so people living in intervention areas 1 have a say in how their environment changes. Secondly, spaces for interaction between different people involved in the urban development process (public servants, planners, business owners, developers, neighbourhood organisations representatives) are opened so knowledge is created and different rationalities come closer together. These are, according to Healey (2003: 111), process outcomes.

Finally, diversity is preserved and fostered in two different ways. On the one hand, by supporting and complementing existing practices, some within formal structures, like centrality development around schools, and others considered part of the informal sector, like densification processes which are partially self-sustained through non-declared rents. On the other hand, preserving diversity means acknowledging structural conflicts and fostering collaboration between different groups rather than domination and competition (Young, 1990). For that, open space is key to allow social interaction between the different and, therefore, the strategies aim at connecting different areas and opening new meeting spaces, both in the fracture line (between intervention areas 1 and 2) and on areas 3, which often lack integrated public spaces.

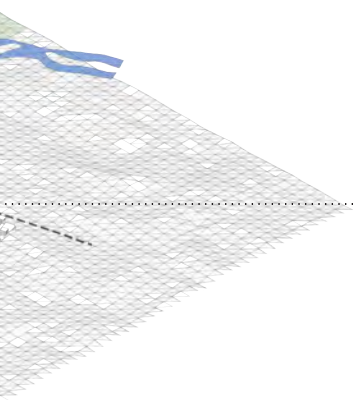

Central Road
Esperanza Av.

14.2 – **Design explorations**

Designs are explorations and, as such, attempts to visualize possible paths to achieve the defined goals. Each design is related to a housing unit, which is in charge of the management of the proposal. In each case, specific set of spaces and stakeholders are included in the housing unit, along with the mechanisms (decisions) put in place to achieve the desired impact (change) in the environment. Three different setting will be used to exemplify the design exploration:

1. Reinterpreting the urban fringe

The urban fringe consists of the areas from the fracture line (20-25% slope gradient) to the steepest settlements on the slopes. These are the areas currently managed by informal developers on the illegal land market. Design will include a proposal for the consolidation of a settlement on the slopes, through collaboration of public investment, collective subsidies and community resources. The housing unit will answer to this collaboration scheme, being rooted in neighbourhood organization and including representatives from public institutions. On the lowest end of the urban fringe, design will include the reinforcement of the existing centrality in school El Amauta (IE 1262), currently managed by UGEL 06 Lima (Ministry of Education). This is done by the redevelopment of land on the fracture line by private developers or housing cooperatives and the implementation of new school facilities, thus becoming a meeting point for people of slopes and semi-flat areas.



2. Supporting existing practices in areas of local centrality

High integrated streets on the low areas of the valley are home to active businesses, such as hardware shops and restaurants. These areas are already being densified, providing space for low-income population through non-registered rented apartments or rooms. The design in this area aims at counterbalancing the negative impact of this process, acknowledging its benefits in terms of overcoming segregation. Design will therefore consider the public space (mainly the street) as a the space of negotiation and integration, where both the economic activity, transportation systems and city life coexist, including vulnerable groups like children or old people. A currently developed subsidy system is modified to improve living conditions in rented apartments, in exchange for rent-costs control.

3. Diversifying profit-oriented developments

A "Newest" *Mi Vivienda*[1] housing development is proposed. Regulations, instead of being flexible to decrease quality and keep profitability, are flexible to include progressive construction and distribute costs through time, thus keeping initial profitability. Design is oriented to show possibilities to do this, as well as to include everyday businesses (corner shops, restaurants) in ground floor dwellings, providing a permanent income to their owners and fostering street life. The approach on housing under this setting is somehow more traditional (housing = noun).

FIG. 14.2 Three settings in the study area of Valle Amauta. Developed by the author.

1 "New Mi Vivienda" credit already exists after the program was reorganized in 2009 (see chapter 6.2)

14.2.1 – **Reinterpreting the urban fringe**

FIG. 14.3 (next page) Associations and activities present at the area on the urban fringe in the example area in Valle Amauta. Developed by the author.

FIG. 14.4 (top) Example zone in Valle Amauta (red square) intervention area. For more detail, see chapter 13. Developed by the author

FIG. 14.5 (right) Winning proposal of the "construye para crecer 2018" competition. Developed by San Agustín University. This is **NOT** an example of what is proposed. Source: Housing, Construction and Sanitation Ministry of Peru, 2019. Seen at http://www.construyeparacrecer.com/doc/Ediciones/Proyectos%20Banco%20de%20Proyectos%202018.pdf (May, 2019)

The urban fringe is considered as the area that goes from the fracture line until the steep slopes where the most recent settlements in Valle Amauta are located. In the example area (see fig. 14.3), key activities, such schools (I.E. 1262) and a community kindergarten that operates under the public program 'wawa wasi', take place. The former is located on the fracture line, the latter on the highest area of the slope, belonging to housing association " Señor de Muruhuay". There are different settlements on the slopes, managed by different neighbourhood organizations. Some of them, like "Las Lomas de Amauta Sector 1" or "Hijos de Amauta A" don't have drinking water connection, even though a water tank was implemented by SEDAPAL (the public water company) on the top of the slope. Land that is too steep to develop or with very poor soil conditions is considered public space or is provided for the implementation of public facilities according to the settlement plans, many of which were defined by informal developers or the initial social representatives of the neighbourhood associations.

Even though there are social housing programs whose target is low-income and vulnerable population like the one living in Señor de Muruhuay, Las Lomas de Valle Amauta or Hijos de Amauta A, they have very little presence in Lima. Buying a plot in the illegal land market is usually a better choice for many people. There are several reasons that explain this. The private housing market is in charge of developing these houses and land value in Lima is too high for this type of development (even though is subsidized) to be carried out; people prefer to live in a single family house in which they make decisions for their own space, even on non accessible slopes, than in an apartment; etc.

The Ministry of Housing, Construction and Sanitation of Peru organizes every year a housing design competition, "construye para crecer"[1], whose aim is to collect designs developed for architects and engineers for housing units that could be part of a project-bank for local municipalities. The teams must design a single family

1 It can be translated as "building to grow". Website: http://www.construyeparacrecer.com/

Main neighbourhood organisations in the area

A.H. Popular housing association " Señor de Muruhuay¨

Housing Association ¨Hijos de Amauta A"

Housing Association ¨Las lomas de Amauta¨ Sector 3

Housing Association ¨Las lomas de Amauta" Sector 2¨

Human Settlement Amauta Zone A

Housing Association ¨Las lomas de Amauta¨ Sector 1

Legend

- Border of organizations / settlements
- Key activities
- Land managed by key activities
- Other cluster activities
- Open space provision

Other stakeholders in the area

MANTHOC Working children and teenagers association

I.E. 1262 El Amauta
Ministry of Education
UGEL 06 (Ate Vitarte)

SEDAPAL

Wawa wasi management committee

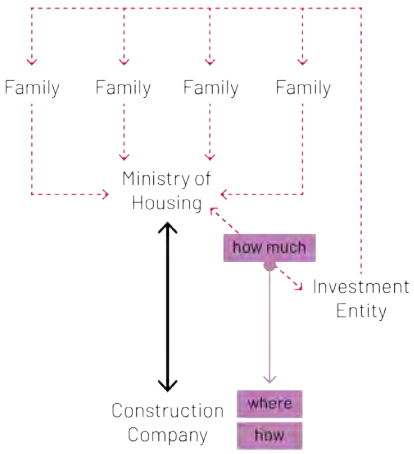


FIG. 14.6 Scheme of allocation of resources and actors roles in current social housing policies by Ministry of Housing Construction and Sanitation. Developed by the author.

FIG. 14.7 (bottom) Scheme of actors role in proposed alternative for housing developments in fringe areas. Developed by the author.

house for a typical plot size in a climatic zone of the country. The designs should consider a basic initial module, built under the budget limitations of Techo Propio social housing subsidy. Designs use a typical housing plot in order to be copy pasted massively.

Techo Propio is managed by the Ministry of Housing. Each family has to register in the program and choose a house in one of the housing developments carried out by construction companies or technical entities (Ministry of Housing online resources, 2019). This entities define where and how the modules are implemented, according to basic spatial requirements (number and size of rooms) defined by the Ministry of Housing. The budget limit is also defined by the Ministry of Housing, who is also the intermediary between the families and investment entities that provide the families mortgage loans to pay the part of the house whose cost excedes the subsidy (fig. 14.6).

Not only the competition "construye para vivir" and Techo Propio program understand housing as a noun, but also cannot succeed in their goals in the city of Lima.

What if this scheme understood housing as verb?

The architects, professionals or independent organizations (such as NGOs, universities or churches) who take part in the competition have to engage with a local community through their local representatives in order to come up with a design for the consolidation of the houses in a settlement. Registration is carried out collectively (community) and it is the technical teams who approach the social organizations, through the registration. They will compete against other collaborations between professionals and local communities.

Consolidation is proposed progressively, as a plan that considered the specificities of the community in which mitigation of risk and provision of accessibility stand as priorities. In this way, the local community have a say in how they live and how their settlement is developed (fig. 14.7).

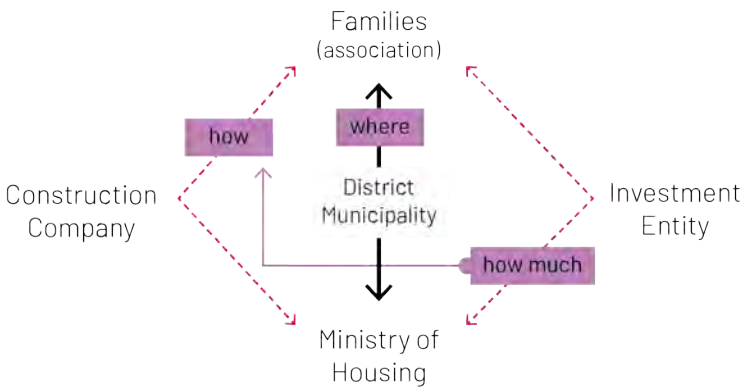


FIG. 14.8 Collective work "faena" in Cerro Esmeralda (Nievería, Lurigancho Chosica District, Lima). Source: CESAL. Picture by the author.

FIG. 14.9 Scheme of resources and roles in proposed alternative for housing developments in fringe areas. Developed by the author.

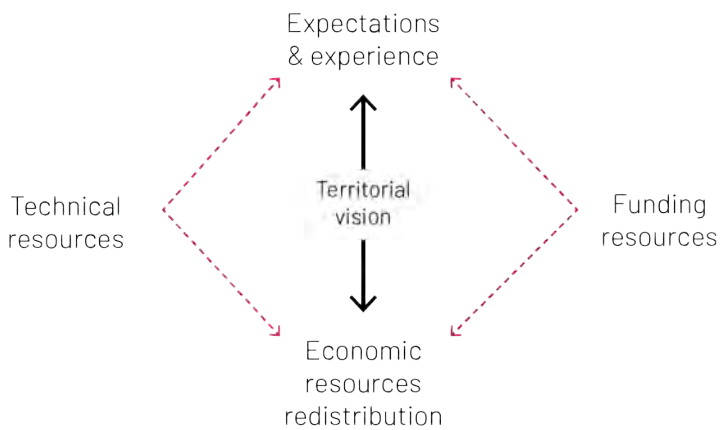
If the proposal wins the competition, the Ministry of Housing allocates collective subsidies for the settlement consolidation. Since the proposal is progressive, the subsidy may only cover the initial phases, such as houses platforms and foundations, including the construction of the street that gives access to the settlement. The community takes part in non qualified construction work collectively (as a requirement to the collective implementation of the subsidy), such as carrying the materials up the hill, with local *faenas* (fig. 14.8).

The number of winners and requirements of the competition would be defined by the Ministry of Housing. The professional team who wins the competition may be hired by the Ministry to manage the implementation or they may win a prize while the local municipality assumes the management of the implementation along with the Ministry and the community. In the first case, control is more distributed, while in the second case, managerial capacities can be developed by the local municipality. The formula can vary in each case.

There are two important remarks to this scheme. First of all, different members of the community should be included as workers and part of the management team. On the one hand, this could create new capacities and build new types of knowledge in the community, on the other, it could provide an alternative, especially for the community leaders, to not enter the illegal land market. It is difficult to provide a plan to prevent illegal land traffic, but it is important to provide alternatives that can reduce their scope of action.

Secondly, proposals should follow a basic plan in order to make more efficient the investment carried out by civil society and State. If settlements compete against each other without a broader vision, fragmentation and disconnected investment would again bring similar consequences to the problems seen nowadays. This broader plan is defined by the local municipality.

Construction companies and investment entities still make profit out of this scheme, but their profit does not define how the program is implemented. It only defines the extent of the first stage of the progressive implementation, which counts on other resources, such as the collective work of the community or public investment from the local municipality (fig. 14.9, table 14.1).



New housing block on the highest area of the slopes. Land provided by local municipality / rural community, developed by private company / cooperative. It benefits from services implemented by the State.

Key project implemented by local municipality according to its vision. Staircase + public space + accessibility to existing services + implementation of water services

Complementary services managed by community and funded by State (vaso de leche, comedores, wawa wasi, etc.)

Water tank (new/existing). Implementation of basic water connection on key project. The connection to each house could be developed later. Implemented by SEDAPAL (public water company)

Contention walls and basic foundations. Implemented through the reorganization of subsidy systems. Collaboration between public + civil society + private sector.

Houses are implemented gradually on secured foundation by each family / collectively

The school centrality on the fracture line is reinforced. On the one hand, a private development will be carried out on the fringe of the school, next to the public space. It can be carried out by a private company or a housing cooperative. This allows the school to get funding for the implementation of library

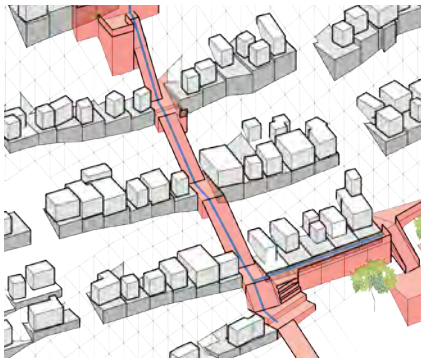
Developed by public sector
Developed by private sector
Developed by civil society
Developed through collaboration scheme

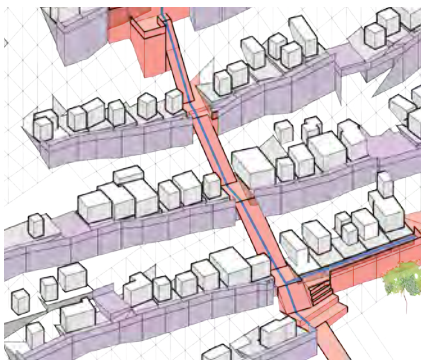
TABLE 14.1 Benefits of each actor in current situation and proposed situation. Developed by the author

	Current situation	Proposed situation
Land trafficker	Economic profit (illegal)	None
District municipality	Economic profit (illegal) / none	Territorial vision + revenues
Ministry of Housing	Redistribution of resources	Redistribution of resources
Construction company	Economic profit	Economic profit
Families / Association	Housing unit	Housing process
Funding entity	Interest rates	Interest rates
Civil society organizations	None	Economic / Social profit

FIG. 14.10 (previous page) Proposed spatial configuration according to stakeholders roles in alternative urban development for the urban fringe. Each colour represents who is in charge of the implementation of each part. Developed by the author.

FIG. 14.11 (sequence) Progressive implementation of the urban development in the urban fringe. Developed by the author.





The interest of the local municipality could be driven by the increase of the revenues on local service taxes due to the formalization of the property of the consolidated settlements, along with the payments collected for the housing construction licenses. These could be shaped according to the progressive implementation. Moreover, the municipal budget used for infrastructure works could be redirected and combined with other public budget. In the example given, a first potential intervention could be a staircase that connects the fracture line with the top of the hill, including three different settlements and the existing public facilities, provides water service and becomes a new sort of public space for the people living on the slopes (fig. 14.11-1). This could trigger the implementation of solid foundations and platforms, along with secondary streets (fig. 14.11-2), using collective subsidies by the Mininistry of Housing. Ultimately, this would provide the basis for the families to build progressively their houses (fig. 14.11-3)

Spatial justice assessment in the redefinition of the urban fringe

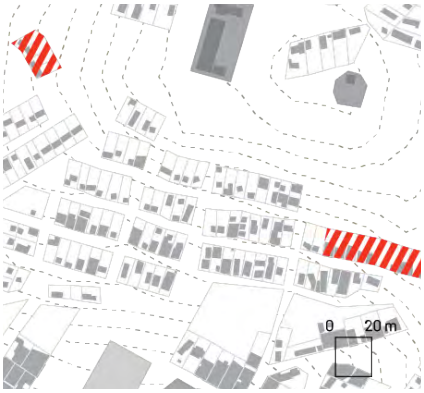
According to the spatial justice goals matrix, developed in chapter 4.4, the following specific goals were addressed in the definition of the proposal:

Original environment: The proposal consists of a redevelopment, therefore, some of the characteristics of the original context makes the original situation not fair:
- The area (at least 331 households) has **not** access to basic services to urban living
- The area is **not** safe in terms of risks and hazards: Construction systems and steepness make houses vulnerable to landslide in case of earthquake.

Decision making process (intention + control):
- Open-ended design allows users to make decisions in the construction process at the block / house scale.
- All actors, in the settlement scale, affected in the urban development process had a voice in the decision-making process.
- Decision-making process creates knowledge on the different actors.

Expected outcomes (product of transformation):
- Open-ended physical design allows collaboration between different actors.
- Settlement has access to basic services for urban living in the settlement scale.
- Open space has potential for integration of different groups (gender, age, origin, socioeconomic group) in the settlement.

1



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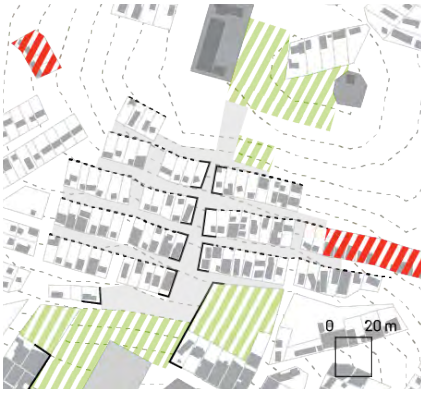


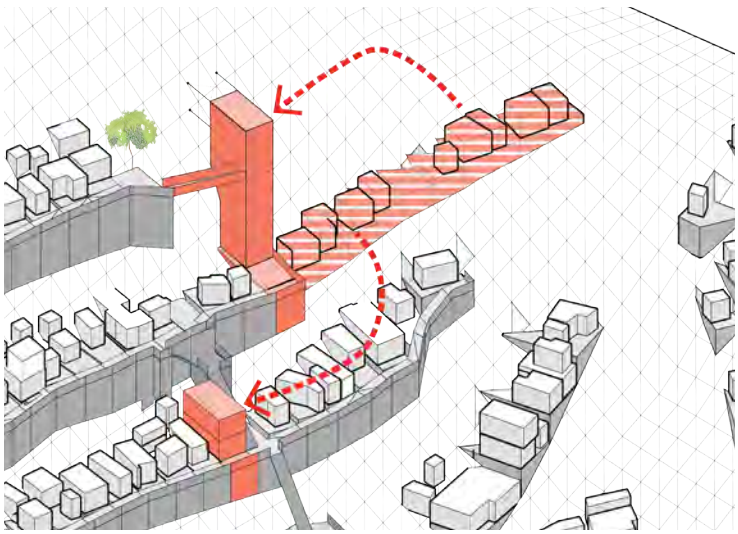
Top of the hill: relocation without displacement

How to stop the continuous extension of the urban fringe? There is not easy answer to this question and there have not been a lot of real testing either. In Caracas, the 1,000m above sea level height, spatialized by a road, acts as physical urban limit to further expansion and, even then, some spontaneous developments take place beyond that border. In Lima, the most successful attempts have been carried out by the Ministry of Culture in archaeological areas on the slopes, which have been cleared several times from housing occupations. Since then, for some, land delimited by the Ministry of Culture is untouchable. Nevertheless, for others, it is still considered land available for informal development.

Having in mind that any strategy regarding the creation of an urban physical limit will not only be mere speculation, but also unable to change the people's perception on land and urban development, this graduation project aims at proposing alternatives for a more fair urban development, which includes actions and decisions made by the people that nowadays live in the urban fringe. Three potential consequences of this goal are put forward:

- By having the possibility to choose, informal land development on the steepest slopes will not be the only possibility left for vulnerable population in Lima.
- By increasing the value of the land by the implementation of basic services, public space or community activities, the urban fringe would be attractive to new stakeholders (housing cooperatives, small formal housing developers), who may dispute the space with informal developers.
- On site relocation of households who live in seasonal flooding areas or very steep slopes with high cost for basic services implementation may be combined with strategies to increase the value of these areas. In this way, the higher extreme of the urban fringe could become a a meeting place for the different ones (fig. 14.12 and 14.13).

Houses relocated
Proposed development
Collective gardens / farms
Open areas proposed
Main connection developed
Key existing activities
Contention walls
Local integrated street



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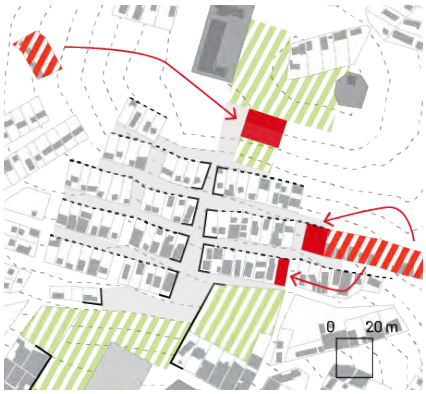


4

In order to become a real choice, any option given (new formal development, densification of the settlements on the slopes, cooperative or collaborative schemes) needs to provide better or new qualities to the people who live in current risk areas or who would occupy or buy land on them.

The sequence 1 to 4 shows new developments for on site relocation (exemplified in fig. 14.2 and 14.3). These could, on the one hand, include collective open space for gardens or agriculture, and on the other, provide better chances to be located close to a high integrated street. Architecture typologies could make use of this by having open ground floors with the possibility of implementing shops or other everyday activities.

Moreover, combination of subsidies and collaborative schemes could give the opportunity to share the costs of the contention wall and street access by different neighbours. A denser building or housing cooperative could therefore be implemented in shorter time than the overall consolidation process explained in previous pages. .

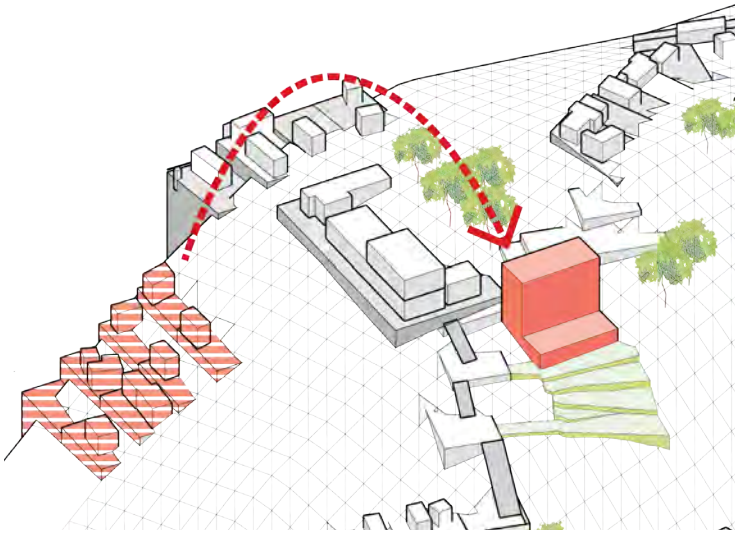


FIG. 14.12 (previous page, bottom) Relocation option 02: Agreements between members of the same community to combine subsidies for the development of a higher density block. Developed by the author.

FIG. 14.13 (this page, bottom) Relocation option 01: New private developments on the upper border of the urban fringe. Developed by the author.

FIG. 14.14 (on both pages) Sequence of relocation (1-4) Plan diagrams on the process. Developed by the author.

Fracture line: mixed-use developments to reinforce centralities

If on the one edge of the urban fringe, alternatives are given to provide services, reduce risk and increase value, the strategy on the other edge of the urban fringe is to reinforce the existing centralities. These are schools or local markets, who due to the process of urban development and the empty areas left around the fracture land, also manage the remaining empty land.

A housing building is developed at the border of the school 1620 El Amauta. It is a pilot project that demonstrates the potential of land managed by public institutions, such as the Ministry of Education. Ownership of the land may remain if the apartments are developed by the UGEL (local institution that represents the Ministry of Education and manages the schools and their facilities) under a leasehold scheme. In such a case, housing development could be done under a cooperative scheme in which a group of people acquire a collective credit for the construction of the building. The income generated by the leasehold could be used to implement or improve existing facilities of the school and thus, reinforce the centrality. Otherwise, land could also be reparcelled and sold to a private investor to develop apartments. In this last case, specific spatial conditions or social mix regarding the beneficiaries should be required from the private developer.

The whole spatial configuration revolves around the public space, using its potential as meeting space (see chapter 11.2 - school clusters). On the one hand, the building and the new facilities open up the perimeter wall of the school. On the other, the building is also used to connect public spaces at different levels, providing connections with the higher streets of the settlement (fig. 14.17). All these actions turn the existing centrality towards the slopes (fig. 14.15).

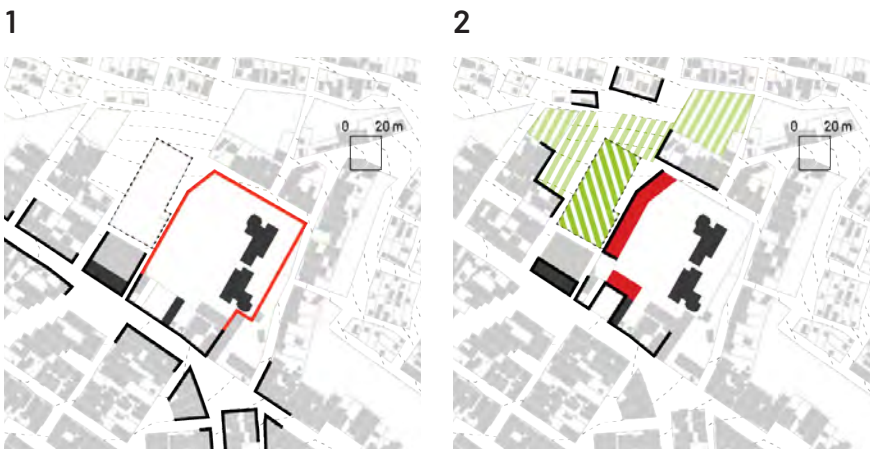
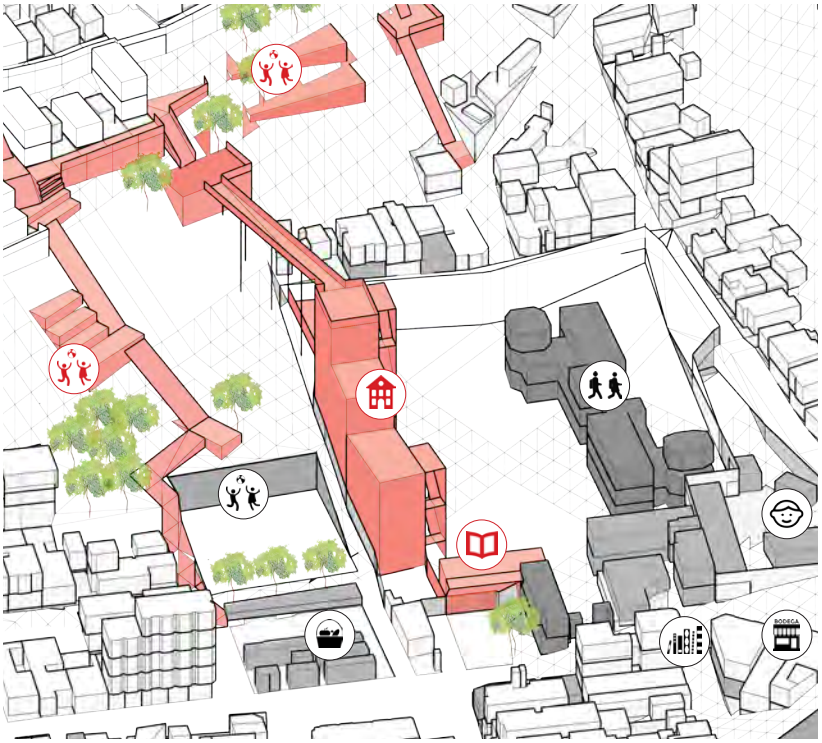


FIG. 14.15 The centrality is reoriented towards the slopes. Sequence. Developed by the author.

FIG. 14.16 Spatial intervention and activities that foster local centrality in the fracture line. Developed by the author.

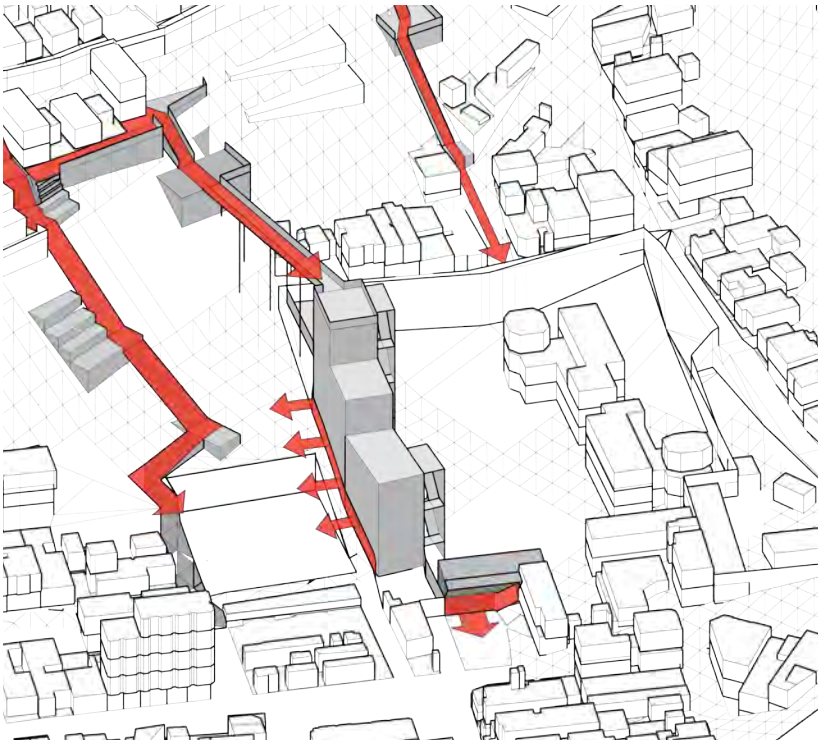


Proposal

Key existing activities

Complementary existing activities

FIG. 14.17 Design actions of the proposal in the fracture line. Developed by the author.



Design strategies

Proposal

What if current model of development continues?

1 The settlements on the slopes would, in the long term, eventually access a safe environment through risk mitigation infrastructure and basic services through the extension of water and sewage networks.

2 This would nevertheless be done through public investment on a top-down basis. Thus, not allowing people to take part in the decisions that shape their environment, reducing the possibilities of knowledge exchange between different rationalities and the implementation of alternative developments.

3 Private formal developers would not see profitable to invest in these areas and public investment would still foster fragmentation (Espinoza & Fort, 2017)(fig. 14.18 and 14.19), delaying or even preventing the integration of these settlements to the city social and physical structure and the implementation of local centralities or meeting spaces where the different ones can meet.

FIG. 14.18 (top) Place syntax analysis on the local integration (walking distance of 500m) of the spatial structure. Current situation. Developed by the author.

FIG. 14.19 Non-coordinated public investment in Valle Amauta. Stairs that end nowhere, patches of contention walls, isolated public facilities. Picture by the author, 2016.

FIG. 14.20 3D visualization of a potential continuation of the development model in the example area. Developed by the author.

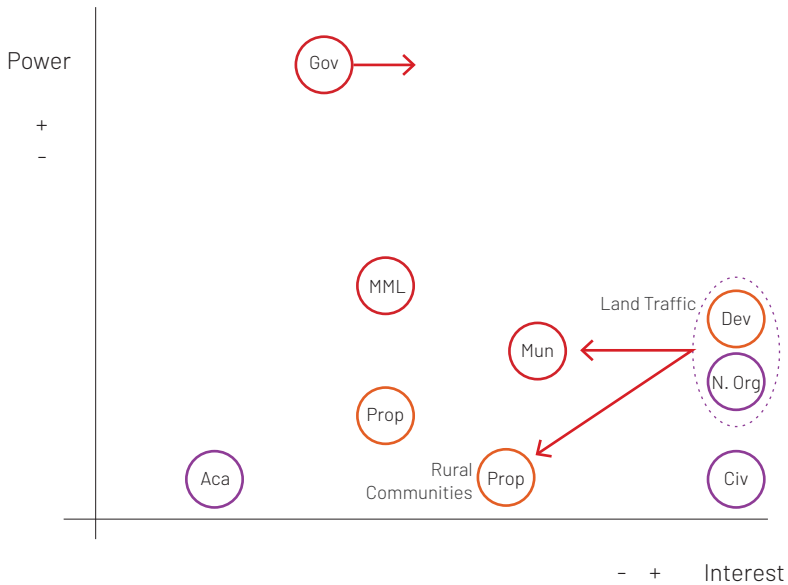
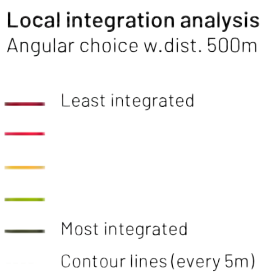


FIG. 14.21 Current power - interest diagram (see chapter 10). Developed by the author.



What if an alternative development is tested?

1 The settlements on the slopes would, in the long term and gradually, access a safe environment through risk mitigation infrastructure and basic services through the extension of water and sewage networks.

2 This would be done counting on the resources of the community and the State, both groups having a say in the way the redevelopment is carried out. Specific interventions on the land on the fracture line (school) and the top of the hill, will draw the attention of the private sector to invest in these areas. The presence of all these different actors will need an intense (and difficult) collaboration and will foster the exchange of knowledge and the approach of different rationalities

3 The settlements on the slopes will be integrated and have the potential to develop their own local centralities (green line in fig. 14.22), in connection with a network of open space and activities from the fracture line to the top of the hill. This network will give the opportunity for the different ones to meet.

FIG. 14.22 (top) Place syntax analysis on the local integration (walking distance of 500m) of the spatial structure. Proposed situation. Developed by the author.

FIG. 14.23 Stairs built in Cerro Esmeralda (Nievería, Lurigancho Chosica district, Lima) that give structure and provide public space and safe zones to the whole settlement. Source: CESAL. Picture by the author.

FIG. 14.24 (right) 3D visualization of a potential alternative development model in the example area. Developed by the author.

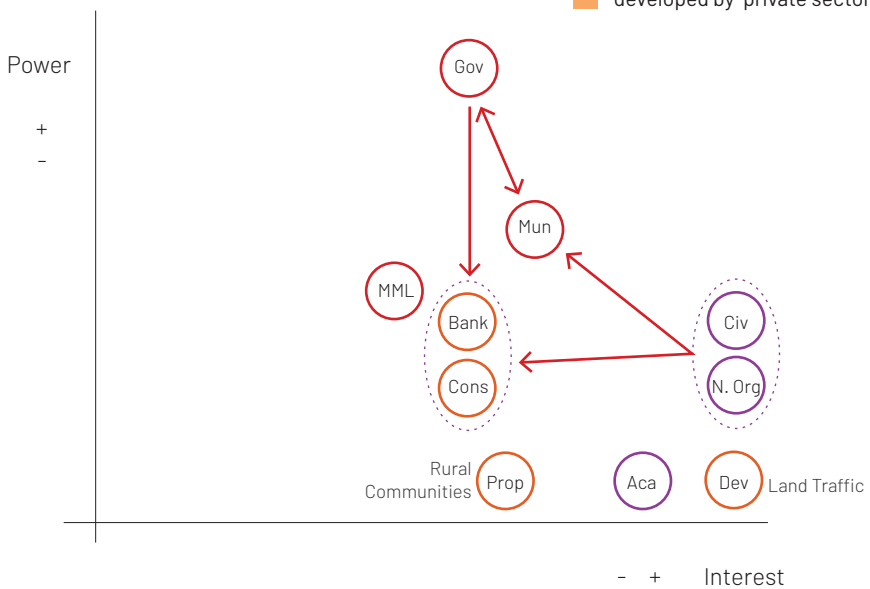


FIG. 14.25 (bottom) Potential power - interest diagram in alternative urban development. Developed by the author.

Gov	Central Government
MML	Municipality of Lima
Mun	Municipality of Ate
Dev	Land Developers
Prop	Land owners
Bank	Investment entities
Cons	Construction company
N.Org	Neighbourhood organizations
Civ	Civil society (families)
Aca	Academia

FIG. 14.26 Esperanza Avenue in Valle Amauta. High-integrated street in the settlement scale where densification currently takes place. Source: Barrio Mio program, Municipality of Lima, 2013.

FIG. 14.27 Esperanza Avenue in Valle Amauta. Hardware shops occupy the sidewalk space in front of their plot. Source: Google street view, May 2019.

FIG. 14.28 Esperanza Avenue in Valle Amauta. Loading and unloading of materials use the public space on the street. Source: Google street view, May 2019.

14.2.2 – **Supporting existing practices**

There are two types of centralities in these areas: (1) Collective facilities, such as schools or markets, in high local integrated streets in low consolidated areas and (2) commercial and economic hubs in high integrated streets on the settlement scale. The former were dealt with in the previous sub-chapter (14.2.1). In this sub-chapter we focus on the latter.

High integrated streets bring the potential for specific businesses to establish and thrive, such as hardware shops, markets or restaurants. In these areas there is already an ongoing process of densification which is translated in a double expansion of these buildings. On the one hand, buildings grow vertically. Rented rooms or apartments become an extra permanent income for business owners and people living close to local centralities. On the other hand, these businesses often use public space as an expansion of their economic activity (fig. 14.27 & 14.28).

The strategy in these areas is aimed at fostering these practices and orient them towards a more fair and inclusive development. Informally rented rooms and apartments often lack basic living conditions and the expansion of businesses privatises open public street.

The Ministry of Housing is currently developing a new type of subsidy oriented towards rented housing (see chapter 6.2), which could be applied in the aforementioned transformations. The subsidy scheme is organized so the tenant is the applicant. He or she should find a house or apartment in the market that fulfils the requirements of the subsidy (formal contract, maximum rent, etc.) and satisfies the desires of the tenant. *Where* the subsidy is applied is decided merely as an economic matter. It depends on the offer of the market and the economic possibilities of the tenant. "Housing is a noun" and the policy acts as a provider of dwellings, reinforcing market trends.

On the contrary, in this design exploration it is proposed to apply the subsidy towards desired urban processes. This would mean to encourage an specific rent offer in areas of the city that have potential to densify. Through this, two processes could be triggered. Firstly, as a condition to the application of the subsidy, requirements could define a maximum rent during several years or work under an application list managed by local municipalities. In this way, the apartment could be rented by low-income population in search of proximity to high integrated and central areas of these neighbourhoods. Secondly, the ongoing vertical expansion could be implemented under safe conditions, supervising and, if needed, reinforcing the structure, which often lacks the technical requirements in terms of earthquake resistance, and assuring specific living requirements, such as ventilation or liveability. Housing under this scheme is part of a process of economic expansion and a vehicle to mix different socio-economic groups. If organized collectively by the association of different businesses or house owners, it could as well become a means to take responsibility of the public open space, the street, as a place where different activities can coexist.

FIG. 14.29 (bottom) Existing activities in show-case example 2: Supporting existing practices. Example in Valle Amauta, Ate. Developed by the author.

The local municipality plays an important role under this scheme, being the institution in charge of managing open space nowadays. It could become as well the mediator between the resources of the central government and local processes of densification. An office by the Local Municipality or the Ministry of Housing could even be implemented on site temporarily as a meeting place to discuss the structural or constructive reinforcements of the buildings or measures in reorganizing public transportation or loading and unloading points and times.

Spatial justice assessment in supporting existing practices

Original environment:
- The area had access to basic services for urban living.
- The area is safe in terms of risks and hazards (earthquake and flooding).

Decision making process (intention + control):
- Decision-making process can adapt and include alternative practices and positive hybridities (Watson, 2006).
- Decision-making process creates knowledge on the different actors.

Outcomes (products of transformation):
- Space fosters flexibility of use, including diverse productive activities from formal and informal sector in the block.
- Regulations foster flexibility of use and productive / economic sector.
- Diverse economic activities are recognised and connected in the settlement.
- New relations of legitimacy and accountability are created between actors.

Public transportation is derived to the parallel street. Sidewalks and public space are reorganized towards the coexistence of businesses and pedestrians, reinforcing economic centrality.

Public transportation is derived to the parallel street, located on the fracture line and, therefore, providing higher accessibility to people on the slopes.

Densed buildings that are already offering rented rooms or apartments are structurally reinforced and become part of the oriented housing offer according to the subsidy scheme.

Local market is reorganized on a light structure that does not affect the archaeological site next to it. The temporary office implemented by the Ministry of Housing or the Local Municipality could be located in the new structure.

Rent subsidy is oriented to densification of buildings in high local integrated areas.

FIG. 14.30 Design exploration for the example on supporting existing practices. Developed by the author.

FIG. 14.31 Santa Clara Housing Complex in the former industrial land close to Valle Amauta. Source: Google Street View.

FIG. 14.32 Commercial visualization of Santa Clara Housing Complex. This is **NOT** an example of what is proposed. Source: Madrid Ingenieros, 2019. Seen at http://www.madridingenieros.com/proyectos-en-venta/residencial-santa-clara/ (May, 2019)

FIG. 14.33 (bottom left) Spatial variables involved in the specific regulation for *Mi Vivienda program nowadays. Developed by the author.*

FIG. 14.34 (bottom right) Proposed spatial variables involved in the specific regulation of "Newest" *Mi Vivienda* program. Developed by the author.

14.2.3 – **Diversifying profit-oriented developments**

As it was explained in chapter 12, housing developments are already taking place in former industrial plots in this intervention area. *Mi Vivienda* program sets up a loosened framework in order to make the development more profitable and in return lower the cost of housing and make it accessible for middle income groups. This housing program aims at reducing housing deficit by mass producing housing and, by the way, create a very profitable business model for housing developers. Many urban problems are not only ignored, but fostered by this type of development. For example, land contribution for public space is smaller in these cases in comparison to developments under market prices. Social developments are understood as low-quality: less public space, smaller open space ratio, etc. (see table 14.2).

Housing developers and land owners are powerful players in Peruvian economy. Even though the idea of changing the whole system appears tempting to the author, this would create a big opposition by powerful economic and political sectors that would block all changes. Therefore, the proposal here aims at lowering the price of the development not by loosening regulations decreasing open floor index, density or parking spaces, but increasing the participation of the dweller in the construction of his or her own place.

Regulations could, instead, be loosen in price and progressive construction (see table 14.3). Some of the apartments in the residential complex could be delivered with only the structural elements and installations so the dwellers can finish the spatial internal configuration. If the price of these apartments is kept between 10,000 and 32,000 USD *Techo Propio* (see chapter 6.1) subsidy could even be applied, making it possible for low-income population to access these high integrated areas. If this scheme is applied to ground floor apartments (which usually have privacy issues), housing could also become everyday shops or small workshops that allowed low-income population to benefit from the central location to make a living.

Nevertheless, regulations on land contribution for public space and public facilities would remain under urban standards, so open accessible space truly becomes a space of interaction for different people.

key economic or social activities
buildings in areas for redevelopment
impermeable borders (walls) to the street
New buildings proposed
Open public space
Active streets
Pedestrian connections

1

2

FIG. 14.35 (bottom) Existing activities in current situation of example area 3: Diversifying profit-oriented developments. Example in Santa Clara, close to Valle Amauta, Ate. Developed by the author.

Spatial justice assessment in densyfing profit-oriented developments

Original environment: The proposal is based on a redevelopment in an area that already has services and is safe.

- The area had access to basic services for urban living.
- The area is safe in terms of risks and hazards (earthquake and flooding).

Decision-making process (intention + control): The development is carried out top-down. Nevertheless, open design in specific apartments (ground floor) is intended as a way to redistribute construction costs and, therefore, decisions in the small scale.

- Open-ended design allows users to make decisions in the construction process at the block / house scale.

Outcomes (product of transformation):

- Open space has potential for integration of different groups (gender, age, origin, socioeconomic group) in the settlement.
- Diverse economic activities are connected to metropolitan centralities.
- Space fosters flexibility of use, including diverse productive activities from formal and informal sector in the block.

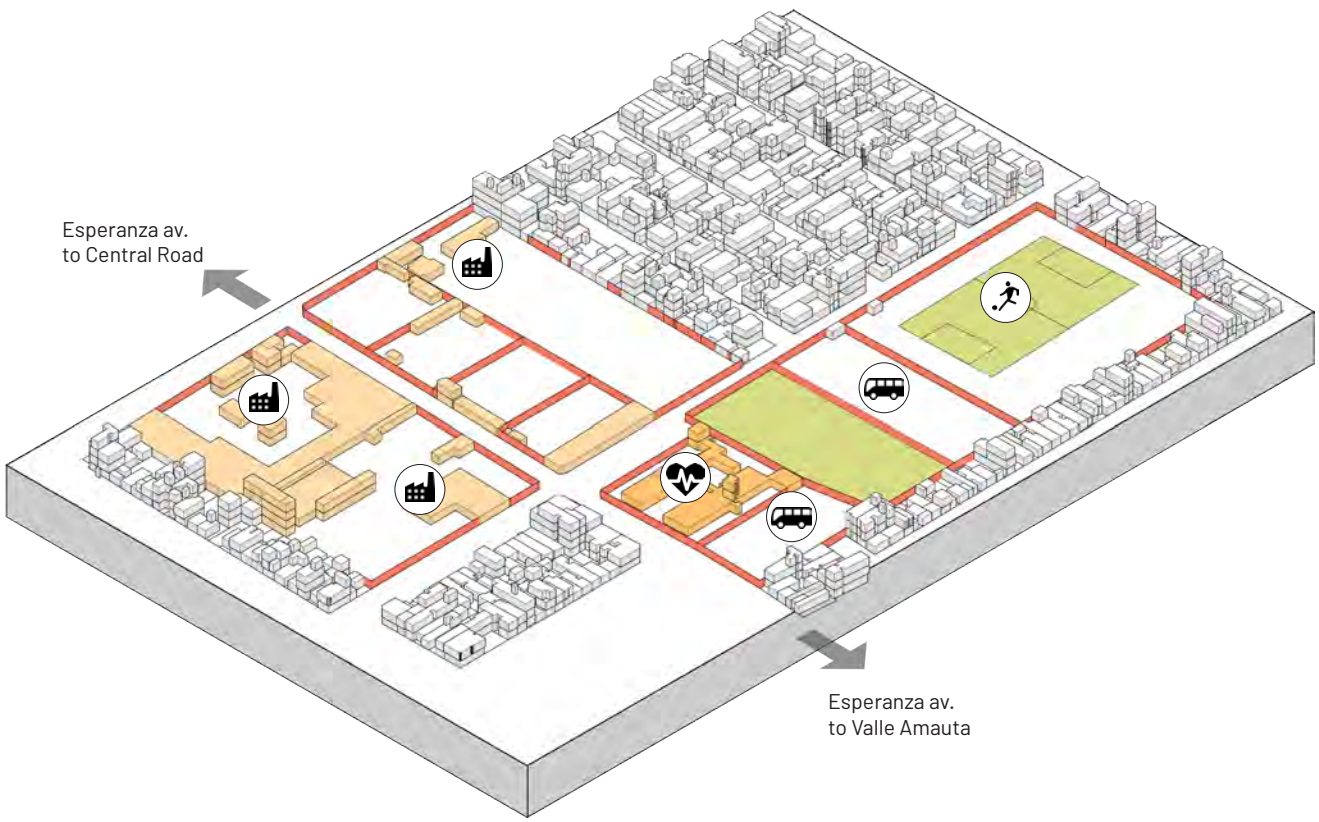


TABLE 14.2 Urban standards with special regulation for *Mi Vivienda* housing developments.

FIG. 14.36 Current redevelopments ongoing in Ate district industrial areas. Showcase example of what would happen in example area if business is carried out as usual. Developed by the author.

Business as usual: *Mi Vivienda* development

Parameter	Medium density development	High density development	Mi Vivienda development
Public space land contribution	8%	15%	8%
Metropolitan parks land contribution	1%	2%	0%
Other public uses land contribution	3%	4%	0%
Public space land contribution can be inside the residential complex	NO	NO	YES
Open floor index	30%	30%	No restriction. Rooms must be ventilated according to Building code*
Apartment minimum cost	-	-	17,200 USD
Apartment maximum cost	-	-	91,100 USD
Maximum gross density	1,300 people/ha	2,250 people/ha	medium: 1,300 people/ha high: 2,250 people/ha
Minimum plot	90 m2	450 m2	none
Minimum plot front length	6 m	15 m	none
Progressive construction	possible	possible	possible

* Building code states that all livable rooms must have a ventilation area of at least 1/20 of their surface.

TABLE 14.3 Urban standards with special regulation proposed for a *"Newest" Mi Vivienda* housing developments.

Proposed situation: *"Newest" Mi Vivienda* development

Parameter	Medium density development	High densty development	Mi Vivienda development
Public space land contribution	8%	15%	according to density
Metropolitan parks land contribution	1%	2%	according to density
Other public uses land contribution	3%	4%	according to density. It can be exchanged for ground floor space
Public space land contribution can be inside the residential complex	NO	NO	NO
Open floor index	30%	30%	30%
Apartment minimum cost	-	-	10,000 USD
Apartment maximum cost	-	-	91,100 USD
Maximum gross density	1,300 people/ha	2,250 people/ha	medium: 1,300 people/ha high: 2,250 people/ha
Minimum plot	90 m2	450 m2	none
Minimum plot front length	6 m	15 m	none
Progressive construction	possible	possible	minimum 20% of the apartments

FIG. 14.37 Design exploration for the example on diversifying profit-oriented developments, according to the regulation in the *"Newest" Mi Vivienda* housing development. Developed by the author.

15 – Potential to scale up

Metropolitan structure, administration and settlement typologies

In this chapter, the ideas developed on the proposals are used to explore potential impact of the alternative approach of this graduation project to space and administration on the metropolitan scale. Firstly it is explored the potential of some of the elements that appeared in the proposal and the multi-scalar analysis to reframe the understanding of the metropolitan structure of Lima. Secondly, these elements are put together with the city's spatial administration (briefly explained in chapter 5.1) and the settlement types (defined in chapter 7.1). The three elements: metropolitan structure, city administrative division and classification of settlements, are used to put forward two basic recommendations. These are examples of issues that need to be tackled down when upscaling the alternative approach on housing and urban development proposed in this graduation project.

This brief reflection needs to be developed and explored further. Even if local interventions are well defined and rooted in specific spatial knowledge and stakeholders that operate in these areas, they are (even if they wouldn't intend to) part of the metropolitan development of the city, putting forward alternative models or reinforcing existing ones.

FIG. 15.1 (next page) Key features of the research seen on the metropolitan scale: Fracture line, areas with slope steeper than 45% gradient, areas with big parcels, homogeneous high income areas. Developed by the author.

FIG. 15.2 1&2 (next page, bottom) Key features of the research seen on the metropolitan scale. Zoom ins. Developed by the author

Areas that kept big parcellation
Fracture line (lowest end of urban fringe)
Slopes >45% (highest end of urban fringe)
High income population*
District border
Districts with high share of high income population

* Data from INEI, 2016 (original data used is from 2013)

Key elements for a metropolitan structure

Some of the key characteristics extracted from the multi-scalar analysis and used as framework of the proposal have potential on the metropolitan scale to become structural elements:

The lower end of the urban fringe: Fracture line

As in any other city, the urban fabric of Lima is diverse, a footprint of society and environment interactions through time (Secchi, 2000). The fracture line, the area where the gradient of the slopes changes abruptly, is a witness of the change in the urban development process around the 1990s. It is present in most areas of the city, located at the last end of the areas developed on semi-flat land. Usually the least accessible and lowest-cost land at that time, many schools, open spaces and public facilities were implemented along it. It is also the starting edge of the developments on the slopes. The change of the slope gradient makes it an irregular buffer. Sometimes it is just a street, in other areas it is a big empty space, where debris from construction was dumped or an open space enclosed by the walls of a school.

The higher end of the urban fringe: Slopes steeper than 45% gradient

Even though there is no clear physical or urban border defined in Lima (chapter 14.2.1 Top of the hill: relocation without displacement), slopes that go beyond the 45% are rarely developed or occupied (Municipality of Lima, 2013a). The steepness in these areas makes it difficult to build a dwelling and their location in far away and high areas delays or blocks the implementation of water services. The urban fringe, the area of the periphery where segregation is reproduced nowadays, extends from the fracture line until this higher end in many areas of the city.

Big parcelations: Land that remained controlled on flat areas of the periphery

Control of the land by private owners during the 20th century, made some areas of the city develop under different transformation processes than *barriadas* or residential areas. This land was often transformed into industrial areas (Independencia, Central Road, Colonial and Argentina avenues), or remained a mix between agriculture and extraction industry (Huachipa, Pariachi). Even though this land has been object of redevelopment projects (Municipality of Lima, 2013a), they have been rarely or only partially implemented. The structure of the parcel structure is unique to hosting industry or big scale uses, and therefore, to potential or future working and productive environments of the city.

Homogeneous high income areas

Few things have been said in this graduation project about high income homogeneous areas. The focus has been on proposing alternative ways of urban development in the former periphery. Nevertheless, as a metropolitan characteristic, they could be seen as a big scale exclusive enclave (Marcuse, 1997).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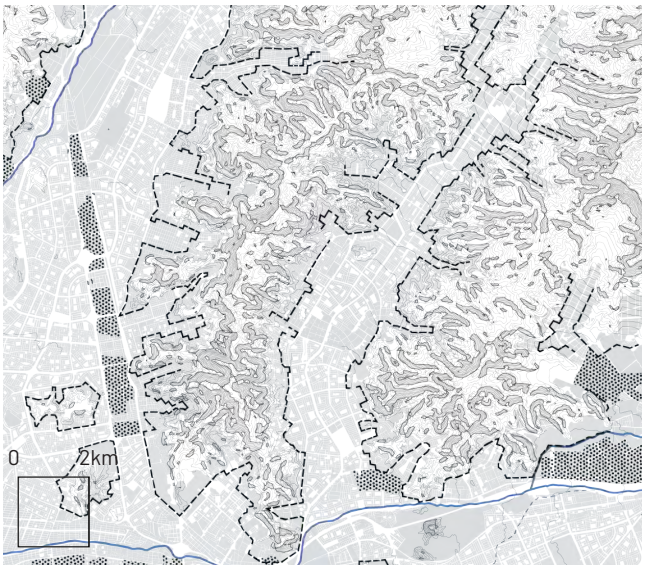
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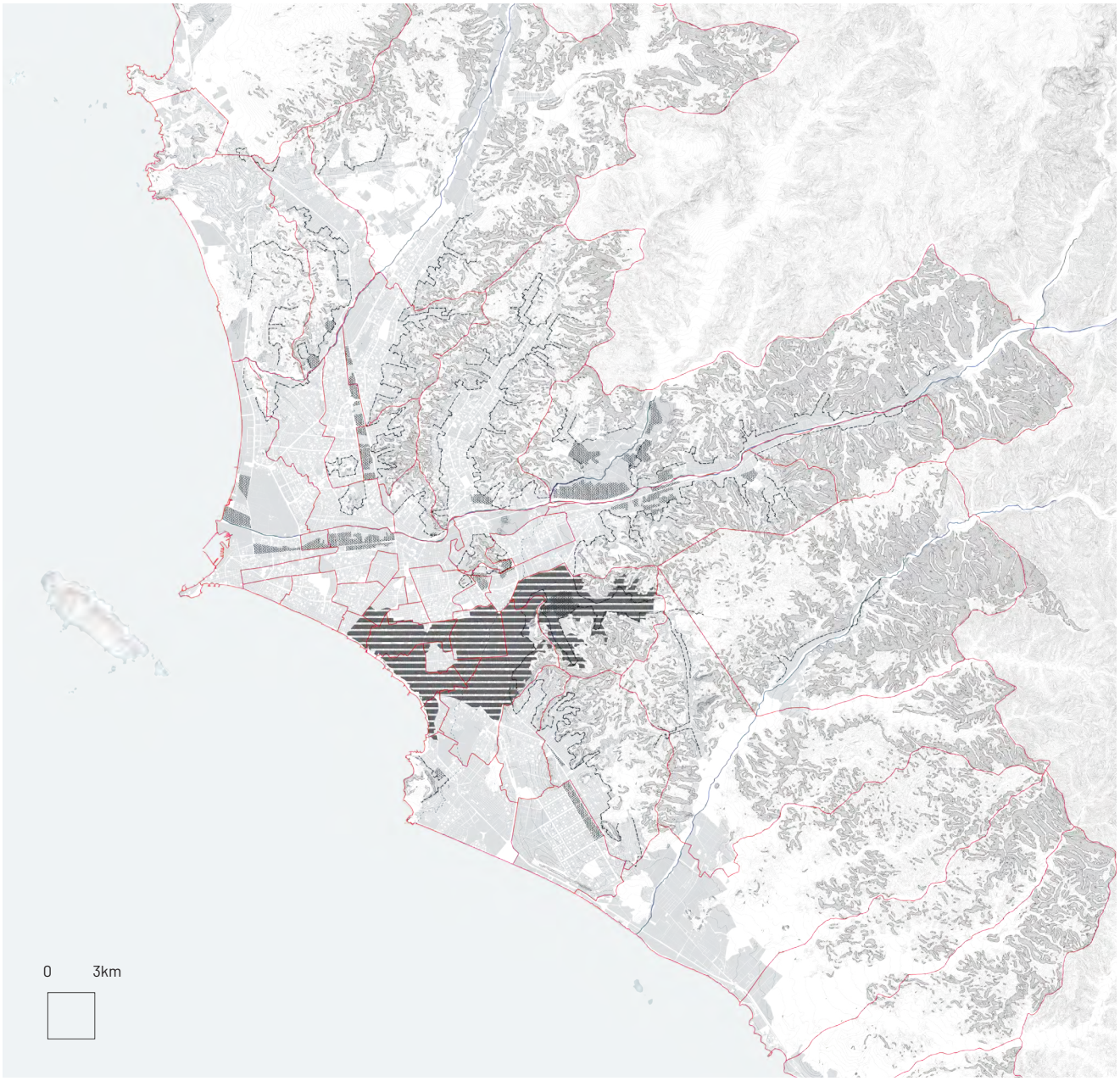
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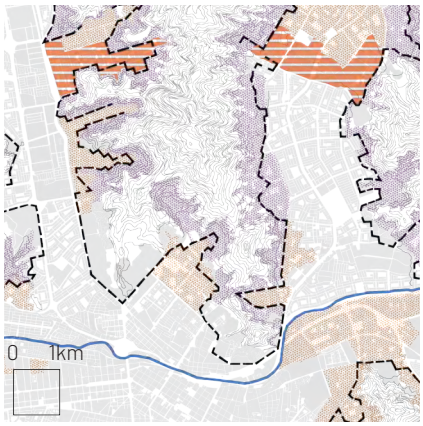


FIG. 15.3 Relation between fracture line and settlement types. Zoom in in Centre-East Lima. Developed by the author.

FIG. 15.4 (prev. page, top) Key elements on the metropolitan scale in contrast to adminsitrative district borders. Developed by the author.

Metropolitan characteristics and administrative borders

- Areas that kept big parcellation
- Fracture line (lowest end of urban fringe)
- Slopes >45% (highest end of urban fringe)
- High income population*
- District border

Settlement types

- Type 1: Organic settlements
- Type 2: Grid patterns
- Type 3: Communal urban units
- Type 4: Hybrid settlements on slopes

Metropolitan structure versus a fragmented city

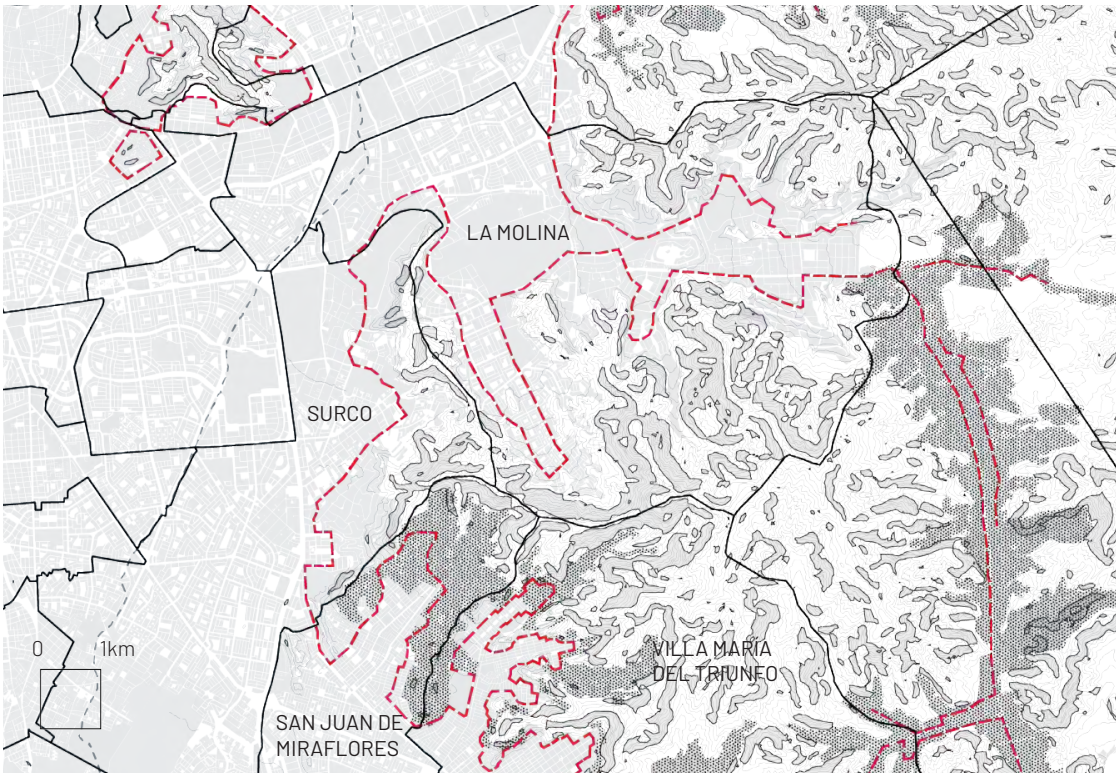
Even though there is a metropolitan municipality with responsibilities on the metropolitan scale, governance in Lima is rather fragmented. Spatial plans, which are mainly understood as zoning plans, are developed by district municipalities and the metropolitan plan currently in use was developed in 1989 (see chapter 6.2). Four reflections on the metropolitan scale are put forward in order to explore the relations between administrative fragmentation, the key elements defined on the metropolitan structure and the settlement types defined in chapter 7.

– **Fracture line between grid patterns and hybrid settlements on slopes**: As said before, the fracture line is a spatial result of the process of urban development. It often divides settlements developed under grid patterns in the 50s and 60s (see chapter 7.1) and the latest hybrid settlements on the slopes (fig. 15.2). As explained in the multi-scalar analysis, these two types of settlements have different sets of stakeholders involved in their urban development and different social and physical outcomes. The fracture line could become the integration line of these two different types of settlements if developed as a metropolitan distributed meeting space.

– **Redevelopment opportunities on big parcelation**: The same way the fracture line has potential to become the meeting area between settlements on the slopes (type 4) and those developed under grid patterns (type 2), areas with big parcelation have potential to become meeting areas between types 1, 2 or 3 and formal residential developments. As explained for the case of El Ermitaño (chapter 11.2), they have specific spatial characteristics and are globally integrated so to host specialized activity clusters on the metropolitan scale.

– **Hybrid settlements on the slopes concentrated in peripheral districts**: The correlation between low-income, steep slopes and qualitative deficit (explained in chapter 10 - outcomes) is reinforced by administrative fragmentation in Lima. Hybrid settlements on the slopes (type 4 according to classification), which are home to most of the vulnerable population are concentrated in peripheral districts. These municipalities usually lack the material and human resources. Their autonomy in tax collection and the absence of mechanisms of redistribution between municipalities makes difficult to step out of this vicious circle. Collaboration schemes will be needed in order to overcome this situation.

– **Concentration of very high income population in central areas**: As hybrid settlements on the slopes are concentrated in peripheral districts of the city, high income areas are mainly located in central districts, where people pay high local taxes and there are business, financial or productive activities that also provide revenue to district municipalities. Administrative fragmentation here benefits these districts in the sense that they don't need to share their resources or capacities. An alternative approach on housing and urban development should be tested in high income areas to open up these areas and change their condition of exclusive enclaves.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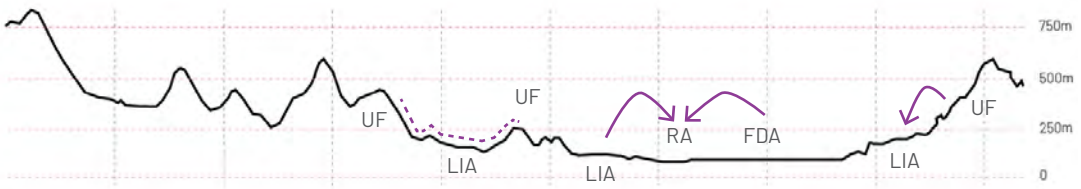
MIRAFLORES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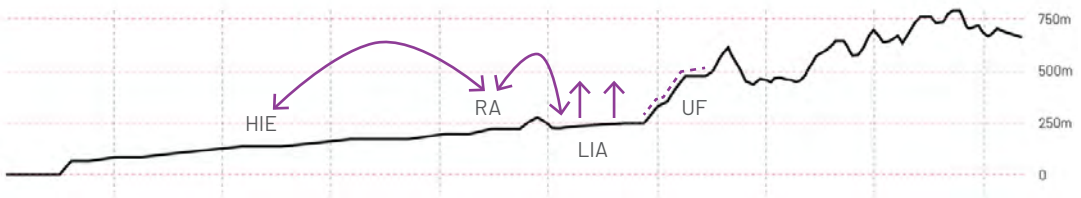
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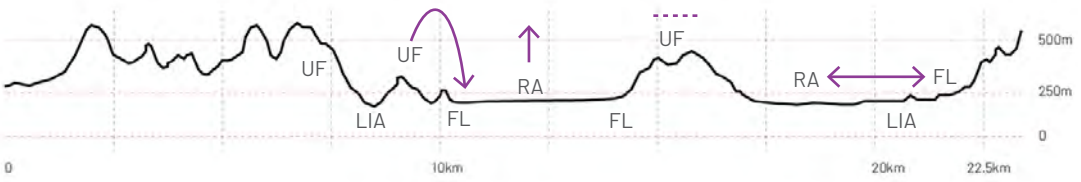
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Fracture line (lowest end of urban fringe)
Slopes >45% (highest end of urban fringe)
District border
Settlement Type 4: Hybrid settlements on slopes
Surco canal

FIG. 15.6 The "wall of shame" between San Juan de Miraflores and Surco. Source: Utero.pe (seen on March 2019 http://utero.pe/wp-content/uploads/2017/06/341836.jpg)

FIG. 15.7 (previous page) Potential for inter-district collaboration along the fracture line. Developed by the author.

FIG. 15.8 (Previous page) Using the cross section as a planning framework in Lima. Developed by the author.

TABLE 15.1 Amount of population and land per slope gradient in Lima. Developed by the author with DEM files from https://earthexplorer.usgs.gov/ (downloaded on Feb, 2019) and Census Spatial Data from INEI, 2007.

UF: Urban fringe

RA: Redevelopment area

LIA: Local integrated area

FL: Fracture line

HIE: High income enclave

FDA: Formally developed area

Recommendation 1: Metropolitan projects should deal with elements from the geographic urban structure

The fracture line runs along 460 km of the slopes of Lima[1]. The potential of it, as that of the other elements of the urban structure of the city, should be used as the framework for metropolitan and inter-district collaborations. Planning tools as land rights transfers, which are now used on preservation of building heritage, could be applied to transfer value under geographical frameworks. For example, La Molina (high-income enclave), high-income areas of Surco and San Juan de Miraflores and Villa María del Triunfo (low-income population districts) are connected by the fracture line (fig. 15.6). Nowadays, a wall (fig. 15.7) runs along the top of the hill, dividing a low-income neighbourhood from a private school and the villas built on the slopes of Surco district.

It is acknowledged that, though it might be the best way to overcome segregation, tearing down the wall and implementing a direct connection through the top of the hill, has a lot of social and economic obstacles in Lima. Instead, the fracture line could become an opportunity to implement a corridor of open spaces that connects the city transversally through the slopes areas, pushing the collaboration of districts with different income profiles. This collaboration might be managed by the metropolitan municipality, but would include the implementation of local public space, facilities and services (such as the ones developed in chapter 14.2.1) , which are managed by district municipalities. It may be an indirect way to transfer not only value, but also capacities and human resources between municipalities.

Recommendation 2: To use the cross section as planning framework in Lima

More than 20 % of the population of Lima lives on the slopes of the city (table 15.1) on 45% of metropolitan land[2]. From semi-flat areas to the top of the hills, topography has influenced land use, property and control, as well as how the city developed and fostered socio-spatial segregation. Interventions such as the one proposed above for the fracture line need to understand the existing and potential relations of areas on the cross section (fig. 15.8). Spatial tools and plans should use this as a basic framework to propose and envision changes in the city of Lima.

Slope gradient	Total population (census data 2007)		Total area (ha)	
0 - 12%	6,691,610	78.99 %	104,060	37 %
12 - 20%	879,494	10.38 %	32,313	11 %
20 - 35%	657,621	7.76 %	55,964	20 %
35 - 45%	181,147	2.14 %	39,684	14 %
> 45%	61,360	0.72 %	52,014	18 %

1 Rough estimation based on the analysis of the urban fabric on the metropolitan scale by the author and calculated using GIS software.
2 The slopes with a gradient over 45% are excluded.

PART 5

Reflection and conclusions

"We are still, even many years later, in the places to which we are subject because (and to the exact extent that) they are in us. They are in us -indeed, are us- thanks to their incorporation into us by a process of somatisation whose logic is yet to be discovered. They constitute us as subjects... To be (a) subject to/of place is to be what we are as an expression of the way a place is."

Fish, M. (2016) "Contested Spaces/Radical Places: Squatting, Place and Subjectivity" in Shaw, B. & Humm, M. (eds.) *Radical Space. Exploring Politics and Practice.* Rowman & Littlefield

16 – Reflection

Seen under the framework developed in this graduation project for urban development, this chapter is presented from the end to the beginning. Firstly, a reflection on the outcomes of the process attempts to answer the research questions and sub-questions. Secondly, a reflection on the process puts forward a discussion on the methods used for the research. Three final reflections are presented. On the one hand, a discussion on the place of the research and its "original context" in the chosen body of knowledge tries to reflect about the contributions it makes (1) and its transferability (2). On the other hand, a reflection on ethical dilemmas and limitations (3) aims at raising some recommendations for further research.

Outcomes

Research questions and sub-question are used to reflect about the outcomes:

RQ 1a: What are the relations between housing, urban development and socio-spatial segregation in Lima?

Concerning the work developed, the main two found aspects that relate these three issues are **property and centrality**. Control of land in central areas of the city through private property has determined the patterns of socio-spatial segregation in the city of Lima (chapter 5 & 6). In the last decades, in connection with the increase of land value of former peripheral areas, these relations have been transferred to the *barriadas* and reproduced segregation in these areas, pushing low-income population to low-value land on the slopes.

These relations have influenced housing policies and mechanisms by assuming that property was the main driver of value. Housing has been understood as the provision of dwellings (housing as a noun: chapter 2.3) and the securing of land tenure in low-value urban areas. Without the existence of centrality or mechanisms for its development, individual property didn't provide value and, therefore, segregation remained the main outcome of urban development.

RQ 1b: What is the potential of housing to reduce socio-spatial segregation and produce a more just city in Lima?

First of all, the potential of housing relies on the capacity to change our understanding of it. Housing understood as an object will always be limited to market influence and will depend on the ability of the public sector to counterbalance its weight. In contexts like Lima, where institutions are weak, this approach on housing will reinforce the desires of the private market, often controlled by few families and investment groups.

On the contrary, if we understand housing as a process, according to the work developed (as an example, chapter 14.2), housing has potential to **create value, develop centrality and propose alternative configurations to manage resources (including property)** in relation to the first two. These three issues both unfold and include the potential Turner (1972) claimed housing had to achieve personal fulfilment by assuming "responsibility for decisions that shape one's own life".

Housing as a process, or housing as a verb (Turner, 1972), brings the possibility to share the decisions made in the process of urban development and include those who are usually excluded. This demands a new approach as well on property. Individual low-cost property has proven to be of little use to urban problems (Fernández-Maldonado, 2015), such as socio-spatial segregation. Moreover, a piece of individual land or a house in a disconnected area with no facilities or services cannot bring the same potential for economic or personal fulfilment than a centrally located property. Housing as a process has potential to propose new models of management of resources and space that are based on the collective rather than the individual. This, combined with the potential of each location (see SRQ 1),

could provide opportunities to decrease market influence through association and collectivity.

SRQ 1: What does it mean a just city in the context of Lima in relation with socio-spatial segregation?

In chapter 4.4 a definition of a just city is proposed. It is based on Fainstein's (2011) three principles of equity, democracy and diversity, which are later developed through the theory review. Nevertheless, justice is a contextual concept that changes through time and the negotiation of different actors and groups in society. Therefore, the definition of a just city developed in this work (and done by one student) is rather a reflection based on applying theory on spatial justice in a context like Lima. In this respect, some key issues are put forward:

Equity is related to many things, but if the main goal is to overcome spatial segregation, **location needs to be understood as an asset to be distributes**. This involves several aspects and may have different consequences. For example, the distribution of risk-free areas may involve on site relocation to safe areas, or the mitigation of risk when possible. Basic living conditions are necessary for the later development of urban qualities like centrality or integration.

Democracy is more related with the process of decision making. As Healey (2003) observes, process has already process outcomes, such as the exchange of knowledge or different rationalities getting closer to each other. Under the framework of this graduation project, democracy and the process of decision making will be relevant in their **potential to arrive to collective management of resources**.

Diversity is a concept with deep differences in western societies and the Global South. While the former tend to be more homogeneous societies (even though this is changing nowadays) and diversity is to be fostered through the empowerment of minorities, the latter are often extremely heterogeneous societies in which majorities were dominated by colonial minorities. **Open meeting space** has a key role in the acknowledgment of structural conflicts and the preservation of existing diversity in a society in which the ones who are different rarely meet.

SRQ 2: What lessons can we extract from the history of urban development and housing policies in Lima?

This research question is widely answered in chapters 2.2, 6, 8, 9 and 10. The reflection of the multi-scalar analysis (chapter 12) already summarizes the findings on this respect, so this won't be developed here.

SRQ 3: What are the relationships between spatial structure and socio-spatial segregation?

The exploration of this graduation thesis started by looking at spatial structure through parcellation, as it has often been done in morphological studies (Vernez Moudon, 1979). Even though there is a clear influence of parcellation and property on the control of the land and the reproduction of segregation, the work developed

shows how this influence differs in relation to centrality, and therefore, value of land. The example of Huaycán in the multi-scalar analysis (chapter 9) shows how the key feature used to develop centrality and opportunities for development in a low value area was not parcellation but **density and local integration**.

Both density and local integration can be seen as inter-related collective variables. The more people live in the same area, the higher it is the economic potential for a local business to thrive (see the comparison between Huaycán and Horacio Zevallos described in chapter 9 - outcomes). Whereas integration depends directly on the spatial structure of the street network, density is a variable that can be achieved in different ways (PREVI, briefly mentioned at the end of chapter 8 is an example of low-rise high density development). Local integration of the street network is therefore the basic framework in the proposals developed (chapter 14.2).

A different relation between spatial structure and segregation is found on the metropolitan scale. As explained in chapter 11 for the specialised cluster of activities in El Ermitaño, activities such as hotels benefit from global integration and big parcel structure in central areas. **Parcel structure** and, therefore, property are thus relevant variables to work with in these cases in order to overcome spatial segregation. Parcel structure includes features such as the fringe between private and public space or the internal subdivision of property within a big redeveloped parcel (see chapter 14.4).

What are the relationships between the decision-making process and a just city in the case of Lima?

The relationship between these two issues is defined by ***who* makes *which* decisions**. There are decisions, such the location inside the metropolitan structure (***where***) and the way people relate to their direct environment in terms of housing activities (***how***) that are nowadays left to the market. Being able to choose where and how to live depends on each family´s income (chapter 6.2) and what the market offers to each socio-economic level. Neither the public sector nor the civil society have a say in these two matters. They depend on the potential benefits of the private sector.

Changing this scheme is not an economic matter (it would not be more expensive if other sectors had agency on those decisions. See an example in chapter 14.2), but one of redistribution of power and benefits. By having an active role in the making of these decisions, public resources could be focused and civil society´s resources could be used to increase possibilities to overcome socio-spatial segregation.

What is the role of housing to reduce socio-spatial segregation?

This research question was devised as an exploratory question. As such, it was used in the exploratory phase of the designs. Different potential roles of housing are proposed in chapter 14, specifically in sub-chapters 14.2, 14.3 and 14.4. Housing there is presented as a means for integrating settlements, supporting existing economic or social practices, fostering collectivity or creating street life, among other roles that aim at reducing socio-spatial segregation.

What sort of tools, policies or strategies should be implemented or changed in Lima to reduce socio-spatial segregation?

This research question is also developed in chapter 14 through the examples showcased. Nevertheless, the main conclusion is that there is a strong need to change the focus in housing policies and urban tools. They should shift from the provision of housing to an understanding of it as a basic process for personal fulfilment and social collaboration. This would lead both to a redistribution of responsibility for important decisions and to maximize the potential of space in different areas of the city.

Process

This graduation thesis is an attempt to combine the knowledge and experience developed over several years in Lima with the approach and methods learnt in the EMU program. In this sense, the initial guess was to use the lens of urban morphology to develop an alternative view on already known topics. Urban morphology would provide a framework to understand the relations between space, activities and decisions. A given context creates conditions that alter the activities people develop and these, in turn, alter back the context (Hillier, 2000). Similarities with this very basic framework were later identified in many authors and literature reviewed and used in later steps of the graduation project (McCartney & Krishnamurthy,2018, in their attempt to apply morphological studies in informal areas; or Turner, 1976, in his approach on housing as a verb).

This basic framework was later combined with Spatial Justice and Urban Studies on the Global South in order to understand *what* to look at and, more importantly, *why* looking at it. The combination of the three bodies of knowledge was necessary in order to develop an alternative view on urban development under two main goals. If alternatives were the expected outcomes, an alternative approach was needed. First, to avoid a quantitative approach on the 'housing problem' (Calderón, 2016). This is not only present in many official policies (Municipality of Lima, 2013a & 2013b; DNU, 2012) or existing research (Calderón, 2016; Ludeña, 2004), but also on my own previous work (Conurb, 2016; Rodríguez & Muñoz (eds), 2016). Second, a direct translation of western views into the Latin American context was to be avoided. Already many authors have reflected on the bad consequences that direct transfer of policies have had in different contexts (Watson, 2016). Even though that is not an easy task (myself as a student and professional have been mainly in touch with western views, both in education and practice), it was worth it to attempt at looking for alternatives in new literature and see existing practices in Lima under a new lens.

Relevance, scientific context and contributions

This research is developed under the broad umbrella of Latin American studies. It draws from much research carried out in Peru (Calderón; Fernández-Maldonado; Matos; Turner) and other Latin American countries (Abramo; Sabatini). The topic of urban development in Lima, especially the development of barriadas, has been widely studied before. The major contribution of this work is may be the combination

of different bodies of knowledge (spatial justice, housing studies, urban morphology and studies on the Global South) and, specifically the use of the alternative lens of urban morphology to see the causes and consequences of urban development process and their relations with the spatial structure. In this sense, the multi-scalar analysis, the use of place syntax tools and the conclusions on the relations between spatial segregation or integration and elements of the spatial structure beyond parcellation and property may be the main contributions of this work. Moreover, it is hoped that the alternative development of John Turner´s (1972, 1976) approach on housing may provide new insights to the study of urban development and socio-spatial segregation in Lima.

Transferability

Even though some of the approaches, borrowed from authors such as Jennifer Robinson (2006) and John Turner (1972, 1976) have already been applied in Lima (Fernández Maldonado, 2015) or similar contexts, transferability of the method and designs of this graduation projects should be dealt with carefully.

Approaching cities as ordinary and avoiding lenses that rank them in a ladder towards development or modernity (Robinson, 2006) allows us to get rid of prejudice and explore new alternatives. Not all cities are on one same track. "Survival activities" (*vaso de leche*, *comedores populares* or *wawa wasi* in Peru, see the purple box at the end of chapter 9) are a good example of an alternative way of development, based on the capacity of local organized groups of women to manage resources and redistribute them in their communities. These types of activities, supported by public programs, provide opportunities and distribute not only resources but also decisions. They are based on specific cultural characteristics of Peru and, even though it is difficult to directly transfer them elsewhere for this same reason, they provide useful reflections and alternatives to the increasing homogenization of urban development in most areas of the world. In the same way, the reflections and work included in this graduation project aim at providing alternative views that might be useful in other places. The emphasis on understanding housing as a process is a good example of the issues that could be transferred to similar contexts.

Nevertheless, most of this graduation project is based on a multi-scalar analysis and a reflection of the spatial and social conditions of the specific context of Lima. Proposals are tailored to this context and, therefore, difficult to directly export. Even if some of the described problems and contexts are similar in other cities of Latin America and the world, their specific characteristics are often different. As an example, even if socio spatial segregation is experienced in Lima, Santiago de Chile and Rio de Janeiro, the spatial characteristics in each place differ. While Lima experiences a graduated pattern of segregation, Rio de Janeiro is a fragmented city in which, despite being close, the fragments are isolated in themselves (Gonzalez, 2019), and the high-income areas of Santiago de Chile developed into an enclave in the East of the city (Moya, 2019). The spatial characteristics are, thus different, and the strategies and projects should differ as well, even though they may use the same alternative approach on housing and urban development.

Ethical dilemmas and limitations

Some limitations to this work are part of a common discussion between design disciplines and social sciences in Latin America (a well as in other places in the world). While the former tend to speculate on possible alternatives to existing problems and sometimes oversimplify complicated issues, the latter tend to focus on the study of the causes, which are often so overwhelming that action seems futile. Issues, such as fragmented administrative organization (touched upon briefly in chapter 5.1), weak institutions and lack of governance or structural corruption define and influence many of the urban issues in Lima, including socio-spatial segregation. Despite their strong influence we should not paralyse or prevent us from developing alternatives that go beyond the current status quo and devise the potential space has in these. Whereas we should be aware of their presence and not underestimate or forget their huge influence in urban development.

Besides this discussion, there are many other ethical dilemmas encountered during the development of this graduation thesis. As a contextual and dialectic concept, the reflection on a just city for Lima should be built in a conversation between several and different actors and consider different perspectives. Methods such as interviews or focus groups on specific topics related to justice, or more abstract discussions on the issue could help to build up this dialogue. Due to the limitations of this work in time and budget, neither of these were carried out. They remain though as a recommendation for further work.

Another recommendation for further work is to develop a more thorough design exploration that gives more depth to the reflection. Due to time limitations, the cases and amount of design examples shown is rather small. Even though it was enough to provide examples used to answer the research questions, there might be gaps and generalizations that could be reduced by exploring different settings and cases, such as the diversification inside high income enclaves or development related with infrastructure in different scales.

Other ethical dilemma is related to the lack of up-to-date or official data. Much of the data used in this graduation thesis has been collected during several years of work in and with institutions in Lima. Some of the data used is not openly accessible, published or official. Plans and studies in Lima are dismissed and rejected by new administrations when political power changes. In this process, data is lost or dismissed, often ending up only in the hands of the professionals that worked in the project. Therefore, permission to use the data is often impossible to get. Since this is an educational research in the context of a MSc graduation project, permission to use the data was not requested. Nevertheless, any further publication or development of this work, would need to deal with this issue.

Finally, it is important to highlight that this graduation project is developed by a Spanish person who, despite working in Lima for 7 years, developed his architecture studies in Madrid and is currently pursuing his post-master studies in Delft, The Netherlands. It should be acknowledged that, despite my close bonds and relations with Lima, the views that influence this work will to some extent be those of a foreigner, issue that has positive and negative consequences.

17 – Conclusions

"There is no greater evil than a problem mis-stated"
John Turner, 1976

Both socio-spatial segregation and the "housing problem" in Lima have been widely studied in the past. If any, the main contribution of this graduation project is trying to reframe these problems by the combination of different and related bodies of knowledge and the use of two alternative approaches.

Firstly, housing understood as a process rather than an object. Policies and projects that approach housing as an object and have a quantitative view on the problem will hardly have agency in social or urban issues. The housing shortage is often used as an excuse to give all responsibility and decisions either to the market or the State. Thus, housing becomes a means to make profit or impose a way of living. Nevertheless, the value of housing goes beyond its monetary value. It is connected to what housing does to people (Turner, 1976). If housing is to have any influence in issues such as socio-spatial segregation, it needs to be understood as a process, and it needs to be open to a wide range of actors and consider diverse alternatives. Responsibility on the decisions must be distributed and shared.

Secondly, Jennifer Robinson´s "ordinary cities" (2006) approach may be used to raise awareness of the potential of everyday activities. On the one hand, they have a direct impact on shaping the environment: they generate local centrality, potential for collective practices, create economic clusters, give value and provide alternative opportunities for personal and collective fulfilment. They, thus, have the potential to influence urban problems, such as socio-spatial segregation. On the other hand, this approach enables knowledge creation and transfer not by the transferability of best practices but by changing the lens we look through and giving focus to processes rather than outcomes. Seeing cities as ordinary may enable us to discover uniqueness in all cities.

Reframing the problem through these two approaches meant decreasing the focus on control of the space through land ownership and exploring the potential of housing in specific areas and processes of the city to develop alternative models of urban development and reduce socio-spatial segregation.

Under this framework, control is related to the spatial structure of the city in a different way than "the ability to close a space, to restrict entry" (Habraken, 2000). Despite their importance in central areas of Lima, parcellation and property have little influence in peripheral areas. Instead, collective variables such as housing density or characteristics as the local integration of the street network may play a significant role in creating opportunities for urban development and collective practices. Focused on land property and the quantifiable provision of dwellings according to market rules, housing policies in Lima dismiss the real potential of the city of the slopes and miss a chance to reduce socio-spatial segregation.

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