

community itself, ignoring the urban fabric around. Small-block mode maybe improve the situation that the community itself is always separated from the city. It will help the community sharing the public service with the whole city, and strengthen communication among the people at the same time. What's more, from the perspective of urban planning system, adding directive criterions and leading design principles at the stage of regulatory plan will be helpful. On the other hand, the self-organization of the community is also important. Favourable operation organization will improve the public participation of community making and the richness of public life it self. Once the residents are the maker of the public space instead of passive participants, the public space will own the most powerful endogenous dynamic.

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## ID 1477 | URBAN CODES INDUCING STREET LIFE, A POSSIBLE APPROACH FOR THE BRAZILIAN CASE

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### 1 INTRODUCTION

Brazilian cities have experienced several cycles of transformation, which ultimately altered these places from colonial fabric to modern agglomerations and metropolitan regions. Population figures are still rising and the urbanisation ratio as well. There is nothing particular about those processes; it is a general trend observed in most countries of the world. What typifies the Brazilian case is that the country has an enormous income disparity that results in different ways to deal with urbanisation and expanding cities network. Perhaps the most striking feature of the major Brazilian cities, in general, is the social and spatial segregation and its impact on street life.

This paper is based on research developed for a master thesis (Carvalho Filho, 2014) in 2014 , that currently is further explored in a PhD study. The research aims to explain the effect of the relation between private and public spaces on urban dynamics. In particular, it will assess to what extent the spatial configuration of this boundary contributes to street life and urban vitality. This study addresses the current set of formal and informal planning institutions to discuss the way plots, buildings and blocks incrementally shape urban spaces and on the other hand how space impacts on human behaviour. So far, the case studies will be in Brazilian cities.

The historical context in the use of public spaces of Brazilian cities and the ongoing debate about the extent of street life and urban dynamics currently observed are inherited characteristics of a colonial past (Leitão, 2009), add specific questions to the discussion about public spaces and public domain. Is it a process that goes beyond the reach of urbanism?

The first differential proposed here is that the research brings to light the processes behind the definition of city spaces, especially the border between public and private domains. The study follows a dual approach, integrating formal and informal institutions related to the development of the city. In that aspect, the study observes the relevance and reach of proper planning regulations and at the same time the role of the informal arrangements and non-regulated procedures that respond to the construction of large extent of Brazilian cities. Formality and informality in this research are considered as particular forms of practice and not necessarily types of territorial formation. There is a “need for further exploration of the ways in which different regimes of informal and formal practices take shape and impact on urbanism” (McFarlane, 2012).

Therefore the study sums to the debate about the role and reach of planning in the context of developing countries, namely Brazil, where economic growth and expansion of the cities are, in general, reinforcing existing divides and disrupting the conditions for street life.

‘The growth and development of several Brazilian cities during the past two decades was not just random or disorganised. It produced, predominantly, architectural typologies, spaces and transportation systems that favour a few ways of life over all others. This disurbanism has feedback loops that create physical structures that hinder other ways of life while resulting in cumulative advantages for the favoured ways, a spiral that continually produces new disurban trends’ (Figueiredo, 2012).

The research acknowledges both the relevance of urban dynamics as a way to counteract segregation in cities and on the other hand, that the patterns of urban dynamics in cities are not yet fully understood and therefore out of the reach of the planning institutions.

The approach of this research by combining spatial analyses to studies about planning instruments will cover a gap in current investigations that frequently focuses on one aspect only. The context of Brazilian cities and the comparative study of formal and informal settlements will reinforce the original character of this research. The research tools that will be used and developed in this study will provide urban planners and designers with instruments to evaluate and assess plans and existing spaces and to have a more accurate perception of the impact of individual spatial and institutional arrangements.

This article represents the initial stages of the research, and it is divided into two parts. The first section of the article reveals the history of planning instruments in Recife, a city in the Northeast of Brazil that is the first case study in the research, and the spatial parameters commonly regulated in these tools. That is demonstrated through a retrospective of the planning codes of the last decades, analysing and relating planning regulations to specific spatial parameters.

In the second part, a series of examples of implementation strategies used by real estate market in Recife will be examined. Connecting planning tools and the built configuration that results when these parameters are applied. The objective here is to identify elements embodied in these rules and somehow assess their impact on the use of public space. The method used is the analysis of development procedures, looking for elements sound enough to determine the role and reach of urban rules in the enabling of the vitality of city spaces. We expect, by identifying these strategies, not only to reveal the actual scope of urban rules when it comes to forging conditions for urban dynamics but moreover to understand what are the current restraints. The paper concludes with an attempt to point out possible contributions to urban rules in the context of Recife.

## **2 PLANNING INSTRUMENTS IN RECIFE**

The review of the planning tools in Recife in the last decades that will follow intends to identify the mechanisms related to design control, whether it is explicit or not in the laws texts. It is an attempt to determine “the process of state-sanctioned intervention in the means and processes of designing the built environment in order to shape both processes and outcomes in a defined public interest” (Carmona, 2016).

Recife has to some degree experienced pioneer interventions in planning such as the partially implemented plan for the expansion of the city. It was commissioned in 1637 by Nassau during the Dutch domination of the region (1630-1654) and is regarded as one of the first urban propositions based on physical interventions in the Americas (Medina, 1997).

In general, planning in Recife can be organised into three main periods that somehow correspond to three main planning doctrines as pointed by Sarah Feldman when studying the evolution of planning practices in Brazil (Feldman, 2001).

In the period preceding the first two decades of the 20th century, there was a dominant European tradition in the formulation of laws and postures that governed construction in the city. These regulations were mainly focused on hygienist and aesthetics aspects.

The decades of 1920 – 1930 are a period of transition where there was a shift from the European tradition to the adoption of certain postures that referred more to American planning practices, such as zoning plans and parkways for example.

The last period proposed by Feldman, post 30's is the one under the influence of Modernism. The first shift was towards a higher level of flexibility in the planning instruments, greater involvement of architects and planners in the decision process and a following change in the urban fabric by the transformation of the parcels and land use.

## **2.1 THE PERIOD BEFORE 1920**

As stated before, the regulations of that period are mainly addressing hygienist and aesthetics aspects of the construction of the city. That is evident in the importance given to the control of street alignments, in the location of different activities in the city and the regulation of built environment regarding open space.

From that period are the Municipal Law 4 from 1893 and the Law 1051 from 1919. The first one is a Municipal Code of Postures, instrument established in the country by federal law where planning tools were still part of the main body of the city regulations. The language and scope of the legislation from that period do not address specifically those involved in the design and construction of the city. It was a broader instrument to assess how the city should perform in general, addressing many aspects, not only those related to land use or typomorphology.

The second one, law 1051, shows already some degree of specialisation regarding the first, there was an overall conception of the city based on an underlying zoning plan that determined four perimeters in the city, main, urban, suburban and rural. In this first division of the city into zones, there was, as observed by Alves (Alves, 2009) a prejudiced organisation of the city by income and social level by defining what type of construction was permitted in each zone. For example, not allowing in the main centre of the city the building of the kind of dwellings inhabited by low-income population.

Regarding urban form, there was a clear connection and hierarchy between the building form and public space responding to the zoning. The spatial result of this instrument was a radioconcentric configuration where the density of occupation was higher in the centre and incrementally lower towards the limits of the urban area following the indications of the previous law.

The maximum height of the buildings was different in the zones and proportional to the width of the streets, ranging from 2 times the street width in the central zone, 1 ½ and 1 in the urban and suburban zones respectively. The minimum setback from the buildings also varied, from 0 in the centre to 3 to 5 in the successive zones. In the central zone, all constructions should be built observing the general alignment of the streets; there was also a minimum height limit and some artifices to allow taller buildings such as the introduction of arcades along the streets.

## **2.2 1930 – 1960**

In Recife, that period is initially characterised by a revision of the law of 1919 in 1936 that introduces new subzones into the existing zoning plan. Functional subzones are created inside each of the first zones, defining different parameters for buildings according to their function. Another point introduced by this review was the introduction of the figure of coverage or percentage of the plot that could be occupied.



densities are reduced overall in the city. However, there is a change in the way the area of development is calculated that minimises the impact of the lower constructive parameters permitted.

In previous regulations when it was stated the allowed maximum building intensity (floor area ratio) it meant that the permitted construction in a plot included both private and common areas. In the current instrument, parameters apply only to private areas. That fact, combined with the increase in the number of mandatory parking units demanded by the law contributes to the creation of massive street plinths, occupying ground floors of buildings mainly to house cars.

Another change regarding this instrument is the regulation of the frontage of buildings; it is stated now that 70% of the front of a plot must be transparent, not allowing anymore the long blind walls that characterise large parts of the city. It is also defined that the requested green area of a plot should also be in the front setback. That represents a change in the visual aspect of the border between private and public spaces, distancing the plinth from the street. However, this law hardly advances in providing the means to have a more active frontage.

## **2.5 HOW PLANNING INSTRUMENTS SET THE SPATIAL FRAMEWORK FOR URBAN TRANSFORMATION**

The planning rules discussed here cover a relatively short time span regarding the history of the city. However, these rules have been responsible for controlling most of the formal urbanised area of the city. These instruments vary in complexity and scope. Still, some conclusions are possible, always trying to relate these plans or laws to their effect on the spatial configuration and restricting the findings to the most important aspects observed.

There can be identified a cycle of policies and legislation that go from a more generalist to a more comprehensive approach. That can be the result of the fact that more detailed and elaborated laws like the one of 1961, that had a very fixed setting of typologies and parameters somehow constrained the action of real estate market. That constraint was reduced in the successive plans by a more general zoning of the city and in a higher dependency on spatial parameters to regulate the construction in the city.

What can be understood primarily from the analysis of law 16176 of 1996 and the instruments that followed it is that these tools are generalising the different spatial features of the city and relying exclusively on parameters that are usually insufficient to deal with the city complexity. Even the more complex zoning plans like the new Plano Diretor of 2008 still lacks some instruments to allow a better negotiation between public and private sector.

In that sense, prior tools like the 1919 law were more efficient as they provided clear elements to the negotiation to mitigate the impact of constructions exceeding the limits stated in the law. Spatial solutions to deal with higher construction levels were embedded in the law; one example was the creation of public arcades to allow taller buildings. It is evident that the contemporary city and its scale of constructions involve much more questions than in the past, but modern instruments hand to private negotiations, and normally monetary compensations, the mitigation of projects with higher use than the parameters established in the law.

That is a clear result of what happened in a given moment when a dissociation was introduced between the instruments that regulate zoning and land use from those that deal with typomorphology. In short, more recent laws have set rules to be applied to the plot, restricting building capacities in an almost detached relation with the territory. Moreover, it is the result of the move from plans that envisioned a spatial configuration for the city, or at least to certain zones, to those that deal with the city based on the control of constructions in almost exclusively in a plot scale.

What has been described so far is that, in general terms, planning in Recife is reactive. The reading of planning instruments presented here shows that, in most cases, the tools could not cope with the pace that market operates and that the time necessary to adjust urban regulations leaves space for problems to persist even after their impact has been realised.

Most of the tools reviewed here deal with the allocation of different densities and functions in the city territory. However, the zoning of land uses was and still is to some degree more focused in the restriction of certain land uses than concerned in providing diversity in the city matrix of land uses.

## 2.6 PLANNING INSTRUMENTS AND THE DESIGN OF AN INTERFACE

“Urbanites experience their cities in what we call the ‘public realm’. It has a broader meaning than just ‘public space’; it includes façades of buildings and everything that can be seen at eye level” (Karszenberg, Laven, Glaser, & Hoof, 2016). In this section, planning instruments will be codified using this notion of the public realm as a framework. The elements that compose this realm will be identified and observed in the different instruments that were employed in Recife in time.

Urban rules are in general associated with a design strategy. It is an attempt to codify concepts and delivery parameters that are sufficiently structured to guide the construction of a desired spatial configuration. “They represent creative acts that solve definite urban problems – and sometimes even create them” (Lehnerer, 2009). In the instruments analysed in the previous section, it was possible to identify the most common parameters used, how they have changed, have been simplified or made more complex, as laws were updated. In the table below, a synthesis of the parameters is presented.

Law	051	7427	14511	16176	16719	17511
year	1919	1961	1983	1996	2001	2008
Minimum setback (front)	null	null	3 to 7 m	3 to 7 m	5 to 7 m	5 to 7 m
Maximum height (total)	Related to street width	Related to street width	Defined per zone	Defined per zone	12 to 25 floors	Defined per zone
Maximum height (plinth)	Not informed	Not informed	6.0 m	7.5 m	7.5 m	7.5 m
Floor area ratio (FAR)	Not informed	Not informed	Not informed	1 to 5	1 to 5	1 to 3
Building coverage ratio (BCR)	Not informed	30 to 50%	30 to 50%	Not informed	Not informed	Not informed
Green coverage	Not informed	Not informed	25 to 50%	25 to 50%	25 to 50%	25 to 50%
Parking demand	Not Informed	Not Informed	01 parking at every 80m <sup>2</sup>	01 parking at every 40m <sup>2</sup>	01 parking at every 40m <sup>2</sup>	01 parking at every 40m <sup>2</sup>
Frontage	Commercial use in certain areas	Commercial use in certain areas	Not Informed	Not Informed	Not Informed	70% must be transparent

Table 1 Main spatial parameters identified in the laws. Source Author’s own

The application of the parameters has resulted in a series of different configurations regarding the building interface that is partially represented in Figure 2. As one can see in Table 1, the change in the parameters is apparently subtle in most cases, but the spatial result can be extremely various. It is therefore expected that each of these spatial profiles or different interfaces has a different impact on urban vitality. That reinforces the role of rules in the shaping of the urban setting and corroborates what Bernardo Secchi (Secchi, 2015) says about the role of urbanism and planning devices. “What changes down the history of the city is much more the regulatory sense and role of each device rather than the catalogue of devices, and it is through this regulating action that the city becomes a machine for social integration or exclusion as the case may be” (Boano & Astolfo, 2015).

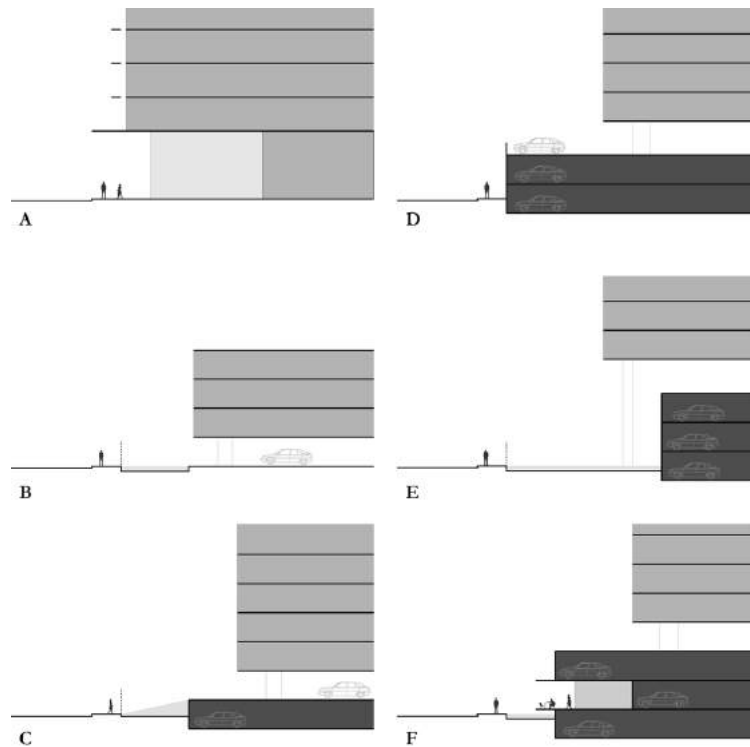


Figure 1 Examples of the street interface, the ones on the left are frequently found in buildings built until the 1970's. The ones on the right are examples of the application of the current planning instruments. Source Author's own

### 3 URBAN CODES APPLIED AND STREET LIFE

The action of the construction market in Recife in the last decades has been so intense and at the same time mechanic and repetitive that particular operational modes can be easily identified and explained. The observation that construction market tends to follow few variables regarding building typologies can also be extended to methods used to make developments feasible.

One can see that in Recife, most of the new developments follow certain rules or steps that deal mainly with three aspects: to gain access to land, to achieve economic feasibility and to overcome restrictions or regulations given by the city planning instruments. Here to follow an exercise to confront the processes described in the analysis of planning tools and the role of the construction market. A critique on how Recife has been built that explains how insufficient regulations and aggressive action of construction sector currently undermines street life in Recife.

That critique resounds the process highlighted by Figueiredo (Figueiredo, 2012) as the causes for the denial of city life in Brazil. The author mention five processes that are, according to him, responsible for the destruction of urbanity in Brazilian cities: growing use of cars, lack of quality in public transportation, high walls and gated communities, loss of diversity and adaptability of buildings and segregation of people and ideas.

Here some of these processes will be further explained in the context of Recife, by describing in step by step way, how the construction market works within the gaps of planning instruments. The rules exposed here represent a critique of the modus operandi present in most of the recent production of new developments in Recife. The focus is to show how parcels and buildings are steadily transformed, what are the impacts for street life and moreover how planning instruments deal with that.

### 3.1 RULE 01 - UPSCALE PLOTS



Figure 2 - Upscale plots. Source Author's own

How does it work?

Recife's urban fabric is still mainly composed of small plots and built with detached houses. In the last decades, there has been sharp growth in the replacement of single homes by larger buildings. The rule here is straightforward; small plots are merged to allow the construction of taller buildings. Previously, construction companies would buy small plots and implement their development. Recently a more sophisticated method replaced this mere financial operation.

Currently what happens is that house owners are invited to be part of new developments instead of getting only money for their properties. What makes this change so appealing to homeowners, is the fact that they can receive from 15 to 50% of the number of dwellings of the new development, depending on the district where the house is located. Suddenly owners of a single house can have 5, 10, 15 apartments.

How does it affect street life?

One might expect that higher density in construction and population would be beneficial for lively streets; however, that is not the case in Recife. The result for urban dynamics is evident in the way it occurs here, upscaling properties contributes to reducing the interaction at ground level, as one gate replaces several front doors, and generally, no public function is provided at the base of these new buildings.

What is at stake here is the loss regarding adaptability and in the potential for street life that resides in a more fine-grained urban fabric (Jacobs, 1961). It is not that small plots built with houses has already a diversity of functions, but they are far more adaptable than a single building where the plinth is usually occupied with parking space.

How do planning instruments deal with that?

Planning instruments frequently, with very few exceptions in specific zones related to nature reserves or historic areas, do not pose any restriction to the merging of smaller plots. In fact merging and upscaling of plots is indirectly stimulated by regulations that make difficult to build on smaller plots. In the construction regulations, initial setbacks and demands for parking are rather constant regardless the dimensions of the plot, what restricts new developments in small parcels.

### 3.2 RULE 02 - SPEED UP OBSOLESCENCE

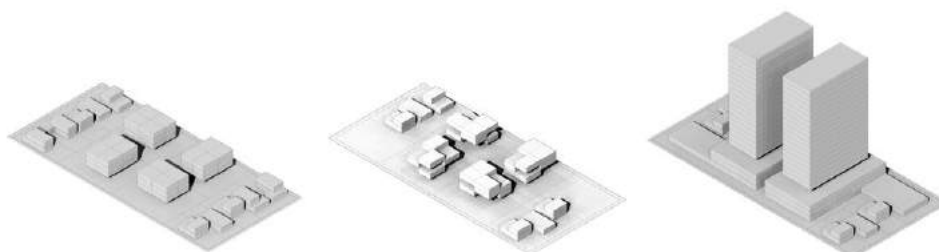


Figure 3 – Speed up obsolescence. Source Author's own

How does it work?

The previous rule is easily implemented, but what happens when it comes to medium size plots and buildings with multiple owners? And what if some of these owners are not seduced by the possibility of multiplying their assets? The procedure in these cases is more elaborated; it sometimes consists of buying units in buildings without necessarily revealing the intentions of replacing them with new developments. Gradually construction companies will gain control of the properties and start the replacement. The process is long and involves persuasion strategies that are at the limits of legality. Typically it is forged a process of fast decay in the buildings by the negligence of construction companies in the maintenance of their units, forcing the remaining owners to sell their properties finally or join the proposed development.

A more subtle but extremely efficient version of this rule is to force obsolescence by defining a model (Amorim & Loureiro, 2003) or standard for living that does not fit in constructions of a given period. Marketing of new developments and their standards of living are so well designed that fully functional buildings will lose their value in the market for failing to provide the same number of leisure activities present in the new developments for example.

How does it affect street life?

Again it is a question of replacing smaller units by individual developments, what frequently reduces the possibilities of interaction and mixed use at street level. The impacts of higher population densities are minimised by the loss of diversity in building age and construction types.

Several of these existing medium size buildings house different functions on the ground floor what is not observed in the developments that replace them.

How do planning instruments deal with that?

In a market economy, hardly anything can be done to prevent construction companies from buying units in buildings. What has been done in the last laws was to classify particular medium size buildings, that were not protected as heritage or national monument, with a certain degree of protection. It was an attempt to avoid their replacement by new constructions. But this instrument is limited as the number of buildings that can justify some level of protection is reduced when compared to the number of buildings aimed at by the construction market.

### 3.3 RULE 03 – HIDE THE IMPACT

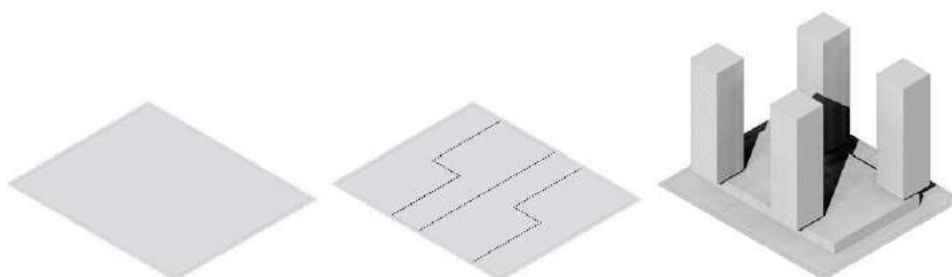


Figure 4 – Hide the impact. Source Author's own

How does it work?

In the law 16.176 from 1996, it was established that any new construction starting from a particular built surface or plot size (20,000m<sup>2</sup> of construction and 3ha of plot area) should be considered as an 'impact development'. That classification demands, that to have a building permit, projects should be analysed in a broader way, assessing their impacts on traffic, environment and in the immediate neighbourhood.

That involves consultation to the local population and several studies resulting in extra time and cost before having clearance to start development; it also means typically that the developer should cover the

cost of the mitigation of these impacts. To avoid that, what happens, in most of these cases, is that a project that would be classified as impact is fragmented in smaller projects. After the completion of the construction, the limits between each project are erased, and the development assumes its initial characteristics of a single unit.

How does it affect street life?

Constructions that result from this rule are inserted in large plots that are not so permeable and constitute barriers in the city. This characteristic of being a barrier will remain even if the project has been fragmented into smaller plots.

They are also commonly represented by vast complexes of residential buildings provided with extensive leisure facilities; therefore, even if they will contain scores of people, the contribution to life in the streets will be very limited. In general terms, the impact of this rule is more related to loss of potential for street life than replacing an existing situation where there was a higher level of activities.

How do planning instruments deal with that?

Although it can be evident to those at public institutions involved in the analysis and approval of new developments that a series of projects in adjacent plots are in fact a single project, there are several limitations in the laws to prevent it to go further. Most of the planning parameters are based on the plot; there is hardly any instrument that relates construction parameters to the scale of the block or district.

### 3.4 RULE 04 – SAFEGUARD POTENTIAL



Figure 5 Safeguard potential. Source Author's own

How does it work?

It is determined in Brazil, by federal law, that local planning instruments should be reviewed periodically, every ten years for zoning for example. That fact frequently raises expectations that in these review processes new construction parameters will be more restrictive than the current ones. To deal with that, projects are approved and licensed even if there is not an intention to implement them soon. Construction sector builds in this way a stock of projects with more favourable parameters and can decide when to start development without the restraints of the current planning instruments.

According to the laws of Recife, once a project is approved, construction should begin in no more than two years, what has not been stated in these rules is how long a development should take to be completed. That rule is basically to safeguard more favourable construction parameters by approving projects before changes in the instruments and sometimes by realising just the foundations of the buildings.

How does it affect street life?

The impact of this rule has two sides, in one hand, plots will be left unoccupied for some time, depriving parts of the district or neighbourhood of life. On the other hand, there is the adverse effect on planning instruments, once this rule allows constructions with former legal parameters to be built in a time where they should no longer be permitted. The role and efficacy of planning instruments are questioned by this example, as the city image addressed in these tools is not necessarily accurate.

How do planning instruments deal with that?

This rule is the classic example of the opportunity given to the action of construction market by the limitations and inaccuracy of the planning tools in Recife. In a recent review of planning instruments, it was determined a period that precedes changes in regulations, where no new project could be approved, but this strategy only pushed back the deadlines for the production of new projects.

### 3.5 RULE 05 – INFLATE PRIVATE DOMAIN

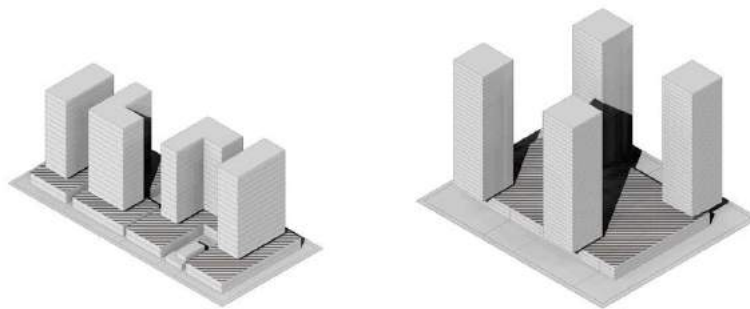


Figure 6 – Inflate private domain Source Author's own

How does it work?

That is a general rule or procedure of the market that is mostly used regardless of the scale of constructions. It consists in bringing to the private domain the larger possible number of functions that are typically related to public spaces. This type of action takes advantage of particular characteristics of the society in Recife like the fear of violence, the search for personal status coming from exclusiveness (Amorim & Loureiro, 2005) and car dependency culture.

Buyers seem to be willing to pay more or to have their private areas reduced as long as they can count on the full program of leisure that their neighbours have. The question is much more related to the number of entertainment items one can have in their boundaries than the actual quality of spaces.

How does it affect street life?

The question for street life, in this case, is that this type of approach, bringing the focus to the private domain, reinforces the secondary character of public spaces in Recife and indirectly undermines their use. Currently, this phenomenon that is prevalent in high-income buildings has been reproduced, with the necessary adjustments on the scale, in developments targeted to medium class and even low-income buyers.

How do planning instruments deal with that?

Planning instruments in Recife do not regulate, at a higher level of detail, the uses one can house inside their buildings. As explained before, most of the instruments are designed to control certain parameters such as building intensity or green ratio, but they do not address the distribution of functions on the block or plot level.

## 4 CONCLUSION

During this initial process of study, especially when comparing the action from construction market with the mechanisms to steer the evolution of the city provided by planning instruments, the limitations of the planning codes to provide conditions, where street life can thrive, was reinforced.

To what extent planning tools can deal with the issues discussed here? Moreover, are planning tools relevant to the current development of the city that so far can be described as a city designed by the market?

From what has been observed here, the development of the city do not occur completely outside the domain of planning instruments, what happens, in fact, is that the city is built using the gaps in the instruments. These shortcomings are mainly the result of the detachment observed in the planning codes between the instruments that regulate zoning and land use from those that deal with typomorphology. As stated before, it is the result of the move from plans that envisioned a spatial configuration of the city, or, at least, to certain zones, to those that deal with the town based on the control of constructions almost exclusively in the plot scale.

The conclusion is that planning instruments are still relevant, although they may not be sufficiently elaborated to deal with the dimensions of street life. Moreover, planning tools are not able to deal with the formal - informal institutional action of the agents involved in the city development. In the next phases of this research, the connections between rules and street life will be further investigated to identify and locate spatial patterns and asses the levels of urban dynamics in this fragments.

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