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SHIFTING PLACES AND COMMUNITY LIFE?

Comparing Morphology and Uses after a Community Reallocation from a *Favela* to a Housing Estate in Natal/RN, Brazil.

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ABSTRACT

The ampler research, of which this study is the initial phase, aims to investigate the effect exerted by morphological changes over the way space is used, guided by the notion that patterns of encounter are organized by the architecture of the settlement and their relation with the architecture of the city. This paper addresses, specifically and comparatively, the space morphology and uses of two settlements that are part of a reallocation process in Natal (Brazil): a slum – *Favela* do Maruim – and a housing estate – Residencial São Pedro – built to accommodate the inhabitants removed from the former settlement. *Favela* do Maruim, a community mainly engaged in the fishing trade, located besides the river Potengi – *its raison d'être* – dates from the 1940s. The 172 families that inhabited its 156 homes, are being transferred to the housing estate that comprises 200 flats (25 blocks), sited 700 meters away from their former community. The new settlement planned as a regular grid, was built in the context of a national housing programme, Minha Casa Minha Vida. As space may promote or hinder encounters, and believing that the day-to-day community life at open spaces was a vital part of the social life in Maruim, we investigate spatial attributes and relate them with uses in both settlements at three moments – when the residents were living in the *Favela*, the housing estate present situation (with building fences), and as planned by the architects – focusing the open spaces within and around their limits and their relationship with the global city. Axial and segment analysis characterized the insertion of each settlement in the city structure, at varying topological radii and metric distances, and their inner structures were examined through Visibility Graph Analysis. Although less orderly and integrated into the global urban tissue, the asymmetric and fragmented configuration of the *favela* irregular enclave defines a strong spatial hierarchy, which privileges certain convex open spaces as points of confluence for pedestrian routes and open-door activities. Not surprisingly, these spaces also show strong private/public interfaces. A different spatial logic guides the modern housing estate Residencial São Pedro, where a homogeneous order pulverizes uses. The study so far, therefore, indicates that, in this case, the morphological change can alter modes of use and encounter, and seems to inhibit community life.

KEYWORDS

Spatial Configuration; Reallocation; Housing Estate; Slum; *Favela* do Maruim.

1. INTRODUCTION

This paper is part of an ampler research that aims to investigate the effect exerted by morphological changes over the way space is used, guided by the notion that patterns of encounter are organized by the architecture of the settlement and their relationship with the architecture of the city. Architecture is viewed as a composition of masses (buildings, equipment, walls, fences) and voids (streets, doors, passages, permeable open spaces) that creates a field of possibilities and restrictions for encounters of different groups – inhabitants and strangers – contributing to social processes and dynamics believed to be the basis of social life.

By focusing on the reallocation of a community of *favela* residents to a housing estate in Natal/RN, Brazil, this research phase attempts to understand the extent to which the space structure in the previously inhabited settlement differs from the one – designed under government guidelines – where most residents now live, and if changes in the patterns of encounter amongst dwellers can be observed. This paper advances some preliminary observations only (based on initiatory visits and photographic records), since the systematic exploration of possible relations concerning uses and attributes of the physical milieu is the essence of the following research phase.

“*Favela* do Maruim” is located besides the river Potengi, next to the city’s harbour, sited in its broad estuary; it is an organically self-built informal settlement, developed by individual actions throughout decades. Before removal, 172 families resided in its 156 dwellings of varying sizes, mostly in insanitary conditions. The reallocation has been proposed by various administrations for a long time and gained strength as part of the harbour expansion plan early this century. In 2013, Natal’s municipality initiated the construction of a housing estate near the *favela* aiming to remove the community to a site within their own neighbourhood. The “Residencial São Pedro” was funded by the federal housing programme “Minha Casa Minha Vida” and was ready for habitation in July 2016. The estate plan, likewise numerous other such development, is an orthogonal grid, flanked by four-floor blocks of flats, totalizing 200 units distributed over 25 buildings. As of April 2017, the reallocation is still in course.

Given that architectural form, in its broader sense, outlines the history and culture of the people who produced it, architecture is both the expression and embodiment of social needs and values. Brazilian cities are dramatically efficient in generating unequal societies that find expression in urban patterns of socio-spatial segregation (Villaça, 2001; Ferreira, 2014; Carmo, 2014). *Favelas* were born within a context of urban, economic, political and social discontinuity. They seem disorderly from a bird’s-eye view (Hanson, 1989), because their formal properties are not those associated with the idea of social order. However, *favelas* are habitats of survival simplified at its extreme; without the help of planners and architects, they reveal the logic of a situation in which people are not given options to choose from. *Favelas* are assembled out of their builder’s means, often starting from a precarious shelter and evolving into a spatial and symbolic complex (Pasternak, 2005). The prestige enjoyed by formal order reiterates the urban pathology label carried by the *favela*’s space; whereas the need to reform its social order – often associated with that of reforming its spatial order - underpins actions such as the one studied in this paper. The removal and resettlement of communities (often to an area in the middle of nowhere) was the standard procedure of public housing policies in the 1960s and 1970s in Brazil. Besides ridding valuable inner city areas of the poor, investors hoped to raise big profits by purchasing large tracts of land in-between the established urban tissue and the new developments, which would be benefited in the long run by public-funded infrastructure.

Reference studies show that modern estates have systematically failed in creating spatial life. In her study of spatial configuration changing patterns in 20th century London, Hanson (2000, p. 100 and 101) affirms that this kind of ‘hard solution’ “became so ubiquitous because it seemed to offer a simple way to ensure a stable social order in the rapidly-urbanising slums of the inner

cities, but that in its spatial power simultaneously to concentrate and to separate, lay the seeds of its own destruction". Hillier and Hanson (1984) point out the disruption of virtual community as a consequence of modern urban design. Alcântara and Monteiro (2010) found evidences of dissatisfaction amongst the population of the community "Abençoada por Deus" in Recife, regarding their virtual "imprisonment" in small dwellings along an orthogonal grid, leaving only "long corridors" (the streets) as open spaces that did not offer conditions for gathering and visual control; dwellers felt exposed to strangers entering the estate. Heitor (2001) reiterates this view by proposing that neglect and vulnerability to antisocial actions is associated to spatial patterns of accessibility, control, visibility and communicability between building and street.

If spatial layout creates or eliminates "life" in the sense that it determines a field of potential encounter and co-presence – a virtual community (Hillier et al., 1987) – the housing estates in Brazil may relate to the modern states examined by Hanson, insofar as they appear to weaken former links of community life. They also reflect an institutional way of thinking in which spatial order brings the possibility of new life patterns: an expression of political force used as a symbolic element of triumph and power (Sobreira, 2003). This paper raises the question that actions like the ones discussed here (old and contemporary), besides materialising deeds of an elitist and unequal society, disassemble a pre-existing social logic and generates unforeseeable impacts on people's lives and modes of social reproduction.

This study was partially motivated by empirical observation of similar cases in Natal, when one of the authors (Lopes) worked as a trainee architect for the municipality social housing division. She observed, for instance, that former *favela* dwellers, who had been moved to housing estates, found the need to secure their homes with walls and railings. Thus, the hypothesis that guided her subsequent research (a master dissertation in progress) is that the change of spatial structure from the previous self-built settlement to the housing estates, defines different encounter patterns affecting the daily contacts among inhabitants. Whereas the embedment of the estate in the city's grid may open the community to the presence of strangers, the former inner logic of encounter may be broken and nexus bonding space and society diluted: a situation that brings to mind Newman's assertion (1980) that where space and society do not correspond, society begins to breakdown.

"Favela do Maruim" was chosen as case study because it offered the thought-provoking chance of following each reallocation and settling phase. The research began when the population was still living in the *favela*, being carried on throughout the removal phase, the establishment of the first settlers, the setting up of their homes and the transformation of common spaces and surroundings. An issue to be discussed later in the paper emerged as important from the first settling days as it bears strong connotations with the extent to which dwellers are willing to be open to the town: that of keeping or not keeping the construction fence that was meant to be removed as soon as the occupation process was completed.

Although some similar actions have been recently attempted throughout the country, this study case is still an exception to most Brazilian reallocation processes, because the resettlement happened in a same neighbourhood. It, therefore, offers a particularly appropriate opportunity to test architectural effects as other key variables are maintained – the community remains in the neighbourhood and are able to preserve bonds with former cultural and economic activities, such as the fishing industry and the river.

Granting that the day-to-day activities carried out in shared open spaces were of major importance in maintaining a "sense of community" in the *favela*, the study explores the nature of those spaces by focusing on the morphological microscale of masses (buildings, fences) and voids (space configuration, entrances, windows) and the limits (interfaces) connecting them, as well as on the physical insertion of the two residential compounds in the perspective of the city. To the purpose of advancing an initial assessment of how the interplay of these variables may affect uses, a preliminary overview about ways in which spaces were and are being used is attempted.

The paper is structured in five items: (i) an Introduction to the problem; (ii) the presentation of the case; (iii) the morphological analysis of the two settlements per se and as to their location

within the city spatial structure; (iv) a panoramic view of the way communal open spaces is used (as per photographs and non-systematic *in loco* observations); and (v) a preliminary discussion of findings in the light of the central hypothesis.

2. FROM FAVELA TO ESTATE

The first actions for the removal of *favelas* in Brazil started in the early 20th century, and were largely implemented, under health standards allegations, in major urban centres during the 1950s and 1960s. This kind of action increased the housing deficit, since those dwellings were, in many instances, the only alternative in the absence of public housing policies (Taschner, 1995). The resettling of families to mass constructed housing developments located in peripheral land was intensified in the 1970s and 1980s, and served the purpose of removing undesirable poverty enclaves from central areas (Valladares, 1978).

Favela do Maruim started as a fishing village made up of wooden houses on stilts by the Potengi river, the harbour and the locality known as Canto do Mangue, where fishing boats anchored and delivered their produce to be sold there and elsewhere. The village grew into a settlement occupying federal property with mud-walled and straw-roofed houses (figure 1f), that gradually gave way to brick and tiles buildings, similarly precarious both fiscally and environmentally, besides vulnerable to floods. Initially the dwellers were predominantly fishermen coming from the state interior, who relied on the river for survival (Bentes Sobrinha; Tinoco; Trigueiro; 2008).

Before reallocation, Maruim occupied an area of approximately 1ha and had 156 buildings of various sizes, ranging from about 4m² to 120m², that sheltered 172 families – some in co-habitation. The reallocation agenda was always present in the life of the community, as they occupied irregularly a valuable central area. In 2000, a neighbourhood rehabilitation plan was designed by the municipality's administration to expand the harbour and remove the *favela*. After this, numerous other proposals followed, one having finally been approved in the context of two federal government programmes: the "Programa de Aceleração de Desenvolvimento – PAC", for "accelerating development"; and the "Minha Casa Minha Vida" ("My house, my life"), for reducing the housing deficit (Figure 1d).



Figure 1 - Map of Natal with location of both settlements (Source: Natal, 2006); C – Bird eye's view of *Favela do Maruim* (Source: Natal, 2006); D - Bird eye's view of Residencial São Pedro (Source: Souza, 2016); B, H, I – Images of Residencial São Pedro (Source: Souza, 2016); E – *Favela do Maruim* by the river Potengi (Source, Natal, 2013); F – *Favela do Maruim* initial occupation (Source: Emereciano apud Tinoco; Bentes Sobrinha; Trigueiro, 2008); G – *Favela do Maruim* (Source: The authors).

The solution found for the harbour expansion was to remove 70% of the area (housing areas), while 30% of the area (commerce at the shore of the river) would remain in the location. In 2013 Natal Municipality, Caixa Econômica Federal (a major government-owned bank) and a private building company began constructing the Residencial São Pedro. The resettling started in July 2016 and is still in progress. A few residents remain in the *favela*, some of them resisting removal. The housing estate is mostly occupied, and early signs of new modes of social life are being shown. The research following phases shall address this process.

3. SPATIAL ANALYSIS

Architecture, rational or intuitive, is more than a background; it structures a network of inherent relations to human activity (Hillier & Vaughn, 2007; Pssara, 2010). People move through linear spaces, interact with people in convex spaces, and see visual fields from a point in space. Thus, space (and its geometry and topology) is intrinsic to human behaviour, and is the basis for the setting of an actual community (Hillier & Vaughn, 2007). By means of how masses and voids are structured in the built environment, spatial form determines encounter potentials and co-presence amongst different groups – of inhabitants and visitors. The encounter interface amongst different groups is associated with spatial and accessibility patterns (Hillier et al., 1987).

In Latin America, spatial segregation is usually strong among distinct socio-economic classes; marginalized groups, or those with low acquisitive power, tend to concentrate in segregated spaces (Vaughan & Arbaci, 2011). As consequence of urban discontinuity, *favelas* often occupy left-over spaces, residuals urban lands or empty public areas, such as narrow grounds squeezed in-between barriers, whose growth is limited by the city's urban mesh. Sobreira (2003) compares this kind of occupation with medieval walled cities. In his analogy, the walls are represented by the social contrast and by the development lines of the predominantly formal city. They can include different morphological patterns, such as a formal layout on the outside, and an informal layout on the inside. This kind of arrangement is clear in Maruim (figure 02). Although located in a neighbourhood integrated with the urban mesh, the space growth is limited by the Potengi River natural barrier, the harbour and the heavy vehicular traffic of the streets Hidelbrando de Góes and São João de Deus. Maruim forms an enclosure, a self-contained structure (Parham, 2015) as only its borders face the outside; the core is more segregated from the rest of the city, only one street allows the entrance of vehicles, the others being pedestrian only. This enclosure causes an effect that Magalhães (1997) calls 'Marginal Integration', which may be taken as a defence mechanism against external pressure.

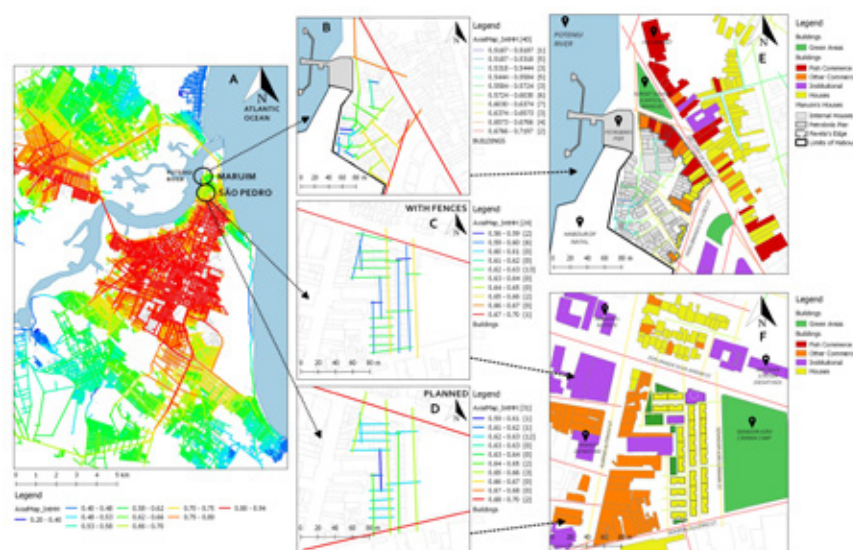


Figure 2 - Natal's Axial Map showing global – Integration HH; B – Maruim's Axial Map with adjacent streets (Integration HH); C – São Pedro's current situation Axial Map (with fences) showing Integration HH; D - São Pedro as planned Axial Map showing Integration HH; E – Land use in Maruim's surroundings; F – Land use in São Pedro's surroundings.

AXIAL MAP (number of lines)	Average Levels							
	As Planned				With Fences			
	CON	RN	R ₃	RR	CON	RN	R ₃	RR
Natal (13260)	3,83	0,63	2,1	1,09	3,83	0,63	2,1	1,10
Maruim (40)	2,89	0,57	1,3	0,9	2,89	0,59	1,47	0,91
São Pedro (25)	4,04	0,62	1,75	0,98	3,66	0,61	1,77	0,97

Table 1 - Average accessibility values at topological radii for Natal, *Favela* do Maruim and Residencial São Pedro.

Natural movement impacts on land use patterns by attracting movement-seeking uses, as, for instance, retail, which tends to be located on places with high potential movement (Hillier, 1996), or highly accessible places topologically (i.e. integrated), while non-movement seeking uses tend to be located in places with low potential movement, or low accessibility levels (i.e. segregated). In the case of Maruim, an 'edge economy' (Greene, 1997) takes place: the *favela*'s borders are the most integrated parts of its spatial compound with reference to the city's structure, and links the settlement to the 'Canto do Mangue', a traditional fishing market. The proximity to the river and the sea helped consolidate this commerce with which the community has always kept ties. According to Lima (2015), 88% of the population show strong bonds with the river and 72% of the inhabitants have their income related to the fishing production, mostly engaged in the cleaning and preparation of seafood for sale. Although being only 700m away from the original community location, in the Residencial São Pedro, the direct relation with the Potengi River – and its fishing commerce for which the population provides service – is lost.

The angular segment analysis (figure 3) carried on for the Residencial São Pedro – as planned – reveals the estate to be more integrated in the city (globally), in terms of through- and to-movement potentials (normalized integration and choice, respectively) (Table 1 and Table 2). Overlaps comprising distinct measurements for potential movement (integration and choice for distinct radii, for instance) are considered prone to mix different activities and people, e.g. visitors and inhabitants (Hillier, 2006; Donegan, 2016; Vaughan et al 2013), a quality viewed by many researchers, since at least Jacobs (1961), as beneficial for urban life. Of the studied situations, São Pedro, as planned, is more likely to favour the mix of visitors and inhabitants. However, if the fences are kept in place the confluence of measures weakens, and as such, the gated São Pedro somewhat resembles the enclosed logic of the *favela*. In almost all cases (except NAIN at São Pedro as planned) average levels of accessibility are lower than that of Natal's system, showing that none of the two residential compounds is highly accessible at a global scale, although being close to the city's integration core (Figure 2). The fences at São Pedro make this the least accessible studied subsystem in terms of global NACH and NAIN.

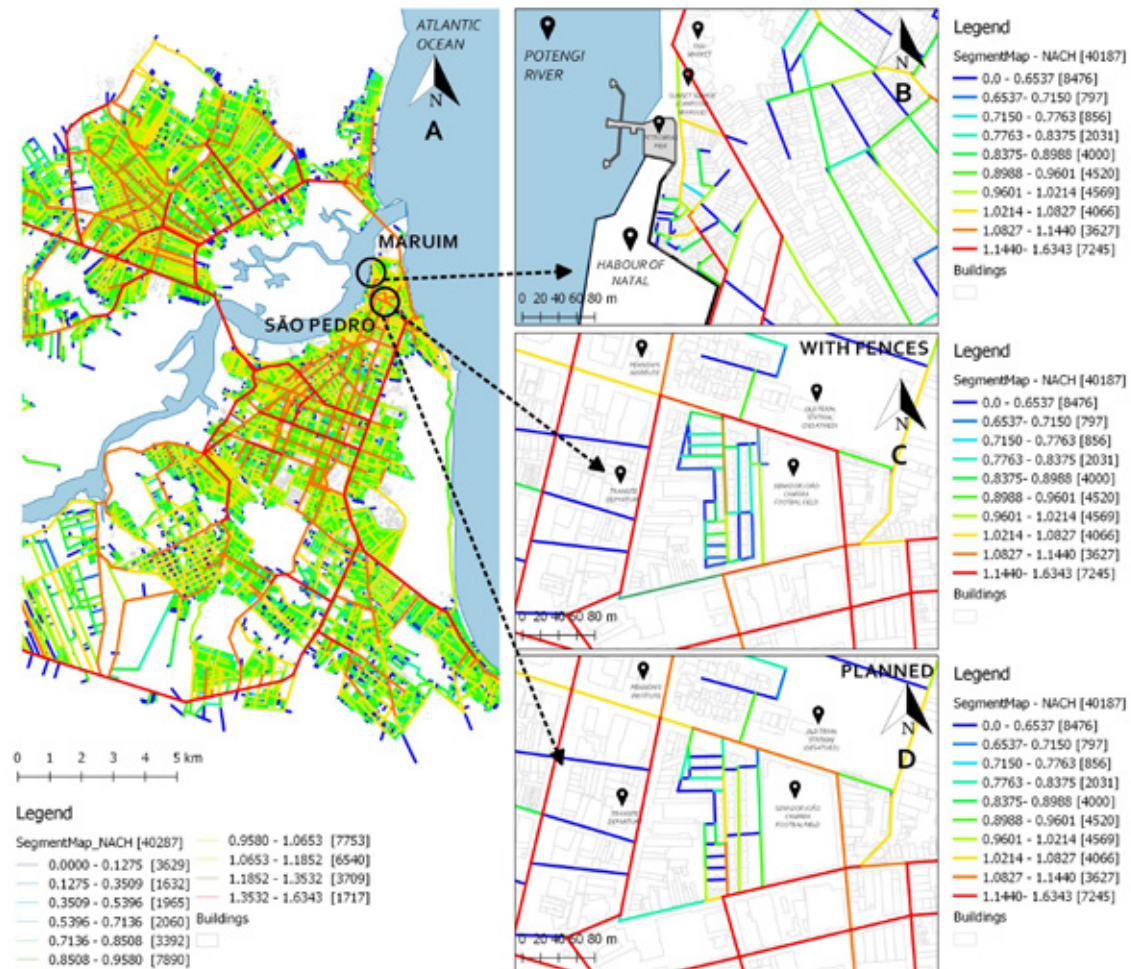


Figure 3 - Segment Map of Natal – NACH; B – Axial Map of Maruim with adjacent streets – NACH; C – Axial Map of São Pedro with fences – NACH; D - Axial Map of São Pedro as planned (without fences) – NACH.

SEGMENT MAP (number of segments)	Average Levels					
	As Planned			With Fences		
	NAIN	NACH	NAIN/ NACH	NAIN	NACH	NAIN/ NACH
NATAL (40287)	0,99	0,86	0,18	0,99	0,86	0,18
MARUIM (67)	0,89	0,75	0,27	0,89	0,75	0,27
SÃO PEDRO (58)	1	0,77	0,50	0,85	0,71	0,39

Table 2 - Average accessibility values and correlations between global NAIN and NACH in angular segment analysis, highlighting top values.

Despite being more integrated within the city in different scales and presenting a higher confluence between potential movement and intelligibility (in both planned and present situations, 63% and 25% respectively), the estate presents a basically monofunctional residential use. Although its spatial structure is open to the city, São Pedro does not seem inviting for people other than those living there, and it tends to be used mainly as a thoroughfare for passers-by. Maruim is a natural obstructor to the city's movement. Although its border functions as a magnet (mainly for seafood buying and consumption), the movement of outsiders does not

enter Maruim. The segregated core, is reserved to community life, with some local commerce (hairdressers, mini markets, bar) offering services to local inhabitants (figure 2). Studies about modes of segregation in Brazil (Monteiro, 2008) show that *favela* occupations tend to favour the notion of Virtual Community, as people in the place feel protected from external threats. In Maruim, a sense of community and self-defence is pointed out by about 77% of the population, which also considers this the main characteristics of their communal living (Lima, 2015).

The self-contained structure is reinforced by the visual analysis (VGA – Visual Graph Analysis). When considering adjacent streets, the *favela* is less visually integrated and consequently less viewed by those who pass outside. Visibility is higher at São Pedro, as there is a straight internal route cutting across most corridors (figure 4).

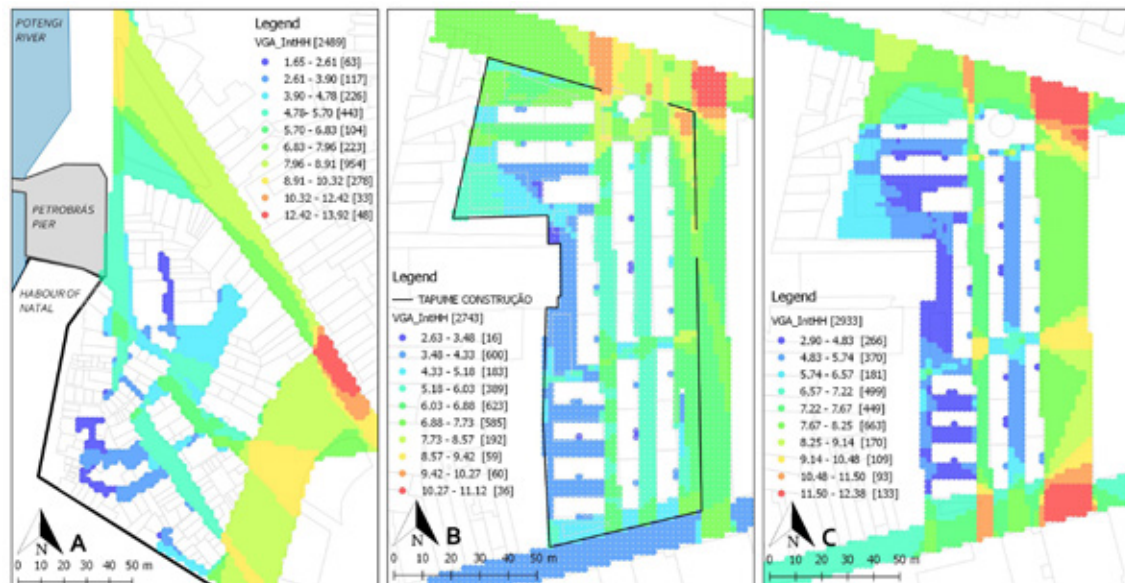


Figure 4 - Left: VGA – Integration HH in *Favela* do Maruim; Right: VGA – Integration HH in Residencial São Pedro.

Favela do Maruim has a street based morphology. Boundaries between public and private spaces are direct, as doors open to the streets, which becomes a public space of recreation, encounter and work (Figure 5). Such configuration can also be associated with life conditions. The space delimited by the urban mesh and by the population financial conditions does not give way for large residences with patios and backyards; the street is an option for activities that usually occur inside the houses, such as washing and hanging laundry, or cleaning fish. At São Pedro, most interfaces are those of windows, as there is only one main receding entrance to each building, and front doors open to the halls inside these buildings. Such public/private interfaces allow for people to peep into some flats through their windows, but the direct access to the street is lost. The configuration ceases to be based on the public space, which loses direct physical contact with the private milieu, as access to flats is in the building's interior; with buildings scattered in the plot, the streets become residual convex spaces.



Figure 5 - Left: Public/Private Interfaces in Maruim; Right: Public/private interfaces in São Pedro.

Such distancing between the public and the private realms might be even more tantalizing for this community as dwellings in the estate are small. The daily activities that used to happen in the streets at arm's length are unlikely to recur as the distance between house and street has become greater; neither will people have space to perform such activities inside the estate houses.

4. THE PEOPLE

Preliminary *in loco* observations took place on the following days: 25 June 2016 – at Maruim – (figure 6) and 16 January 2017 – at São Pedro – (figures 6 and 7). The settlements were roamed on foot, at approximately the same hours of the day; pictures and observation notes were taken.

The construction fences are still in place and shall remain there, according to information from the municipal administration until the resettlement is completed and all apartments are occupied. This situation was thus considered in the space analysis, to understand the effects that the present configuration might exert as compared to the planned arrangement, and to explore the possible emergence of relation modes among inhabitants and between them and the built environment within this context. It was observed that the construction fences work as a protection from strangers, and support for some activities – i.e. hanging laundry. Nonetheless, other forms of protection have appeared, such as bars on doors and windows (figure 6).



Figure 6 - A, B,C – Quotidian views in Residencial São Pedro ; D – The traditional clothesline.

As to the presence of people in the streets, in Maruim people concentrated on highly accessible spaces (all measures of axial and segment analysis) (Figure 6). In segregated spaces people were engaged in momentary activities (such as hanging laundry) or loitering by. In terms of visual integration, people tended to remain on spots that are visually one step away from most accessible spaces; thus, being able to observe what was happening while not being the centre of attention. Other than passers-by, people gather in most integrated spaces talking in circles on the pavement mostly in spots facing front doors. It was also observed that movement in the streets was surveyed by people from inside the houses. At São Pedro people also seem to concentrate on places close to visually highly integrated places; however, uses are scattered (Figure 7). People were observed to group round the hallway doors to the blocks of flats and in one of the way-ins to the estate on spots more or less privileged in terms of visual integration. Unlike at Maruim, at São Pedro most of the people seen wandering round the estate were children (Figures 6 and 7).

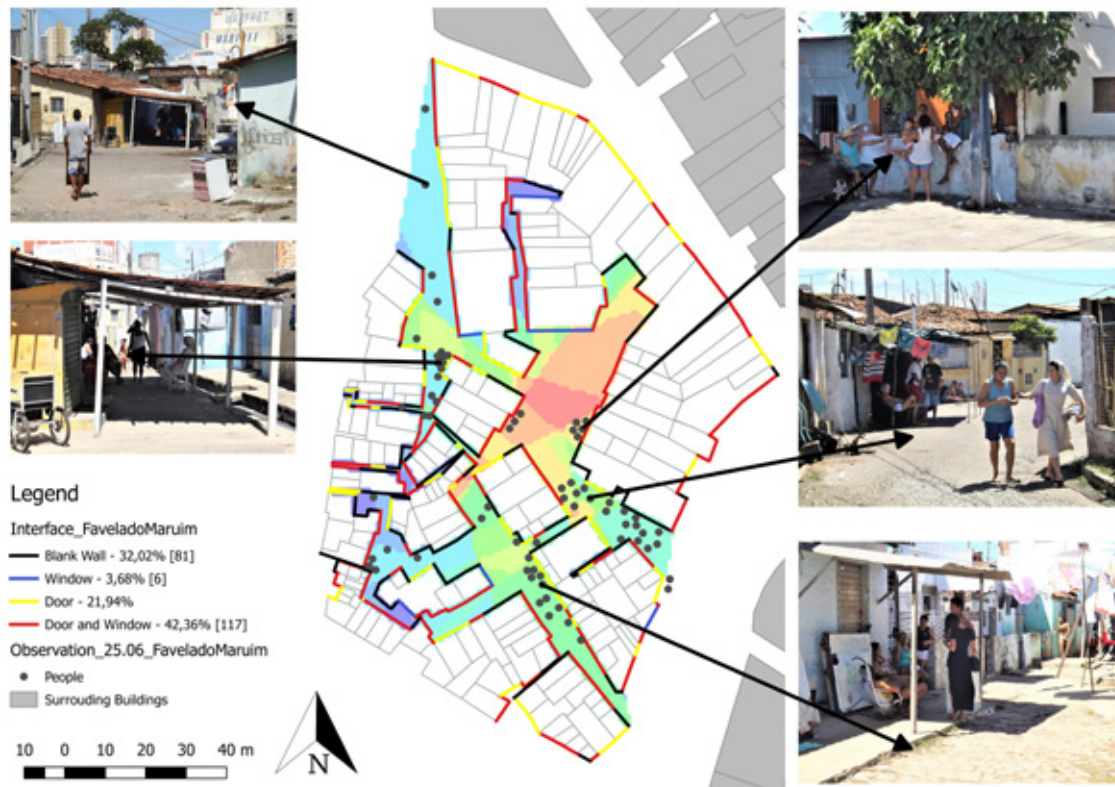


Figure 7 - Uses, interfaces and VGA in Maruim

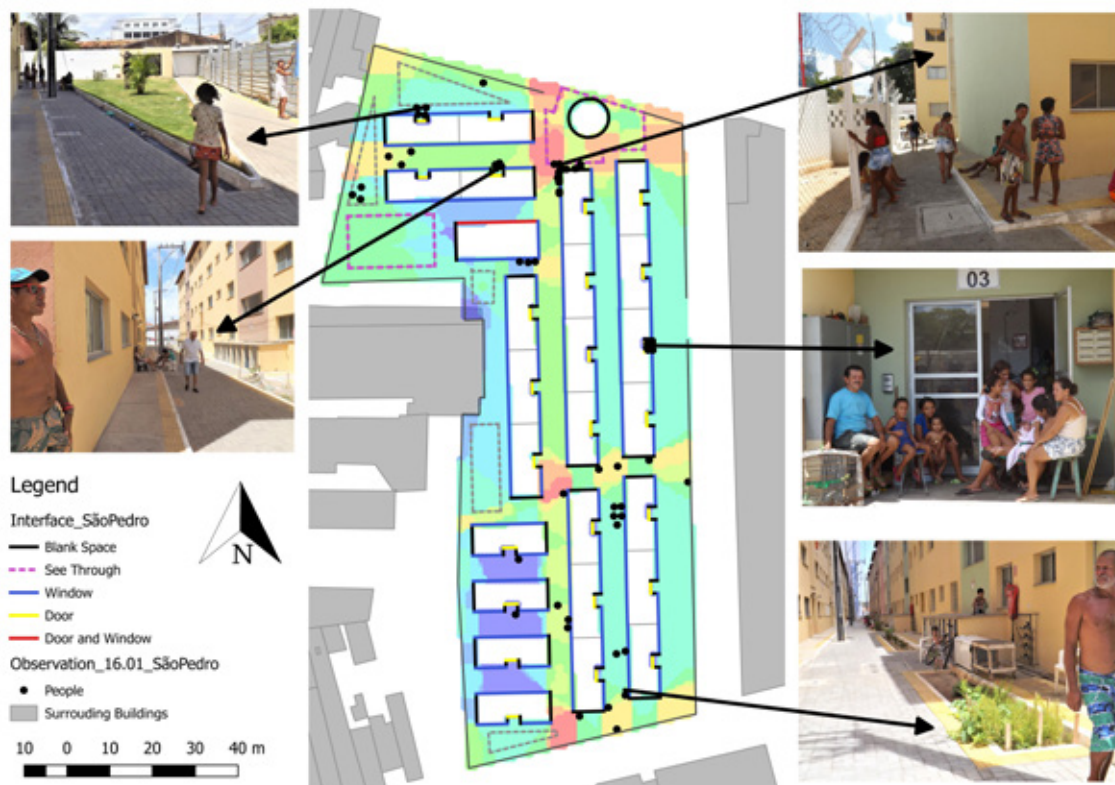


Figure 8 - Use, interfaces and VGA in São Pedro (with fences).

5. CONCLUSIONS

The Residencial São Pedro was conceived under a geometric order, following contemporary mainstream planning and building, which fails to encapsulate the complex and organic structure of community life (following Hanson, 1989). Although seemingly disordered, the spatial configuration in Maruim encloses an underlying order, which appears to favour certain aspects of community life. Movement is strongly related to the topological and metric accessibility hierarchies. On the other hand, at the estate the regular homogeneous layout of the new buildings leaves only residual spaces for common use, a fact aggravated by there being weak interfaces between the private and public realms.

The spatial configuration in the *favela* clearly defines a 'heart', a central area in which visibility is the highest (from it and, also, to it, as many residents were only one step away, being able to see what was going on, but not being too exposed), and the link between public and private realms was close, thus making a more cohesive entity. In the residential estate, places of visual advantage fail to characterize a community centrality; the public and private realms are physically more separated, both horizontally and vertically – still more so with the existing fences. At São Pedro people persist on staying at open spaces in the estate, but are forced to scatter in small groups, as there does not seem to be a clear centre or confluence of accesses and views. Places where people gather are less continuous to private spaces – as communication is either severed by blank walls or made by windows, most of them high up. This diminishes peoples' flexibility to move from private to public spheres and reduces natural surveillance (Jacobs, 1961) as compared to that in the case of Maruim.

Regardless of the proximity between the two housing ensembles, the direct link between the *favela*, the river and the fishing market was broken with the reallocation, disrupting an established social logic. Mixed uses or commercial activities were not contemplated in the planned settlement; the only non-residential uses included in the plans were a community centre, a games court and a children playground. The community centre remains inactive (the community has not had access to the building) and there is not an appropriate place for meetings or developing commercial activities. The relative short occupation time has not engendered, yet, the establishment of spontaneous alternative facilities as had occurred along the many decades of occupation in Maruim. This meagre use mix may be a crucial factor for the dispersal movement of people. The current construction fence helps to convey some similarity with the *favela* visual and physical segregation logic, so that its eminent removal raises questions as to the residents' behaviour when the morphological nature with which they were previously familiarised will be fully reversed.

The alteration of built form attributes in the estate – e.g. interfaces, building entrances and economic activities – as compared to the *favela*, points to a situation that does not favour vitality. The *favela's*, spatial and cultural patterns show the ability to thrive as a community, although being an enclave. The estate would, as expected, allow more permeability to the city and potential confluence between inhabitants and visitors. However, this also seems to hinder local community life, as there is not a clear centre, and movement is more likely to split the place in halves. While the planned grid might allow for confluence of movement, from, through and to the surrounding areas, these are not yet present in actual space, so that it prevents discussion about possible benefits that movement can bring to the community's social life, as fences remain and cut private and public realms.

Findings therefore suggest that the change in spatial configuration has altered the use of communal spaces, and consequently of encounter modes and social interface. Such effects were not considered in the architectural conception and might dramatically undermine the pre-existing sense of community. We hereby underline the morphological investigation of masses and voids – built shells and space – as a powerful tool to assess such changes, and to guide design, by offering knowledge about the interplay of architecture and use that might be considered during conception.

As community life at São Pedro continues changing, further considerations on the effects of architecture on social life are at the core of our following research. These will also address the questions: How will the fence removal affect the community modes of space use? Will the exposure to the city raise intolerance and induce people to stay inside their homes? Or will this lead to the addition of private or semiprivate barriers such as gates and fences? We expect to answer some of these questions as the ampler research, of which this paper reports the pilot study, is completed.

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