

Houses of Recife

From diachrony to synchrony

19

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Abstract

This paper presents a study on changes in domestic space organisation through time. The object of study is a set of vernacular, eclectic and modern dwellings, built in Recife, Brazil, from the eighteenth to the twentieth century. The study suggests that these houses were preliminary social manifestation, controlled by social codes of behaviour, but evolved as spatial considerations, with social codes becoming a minor issue. Pre-modern houses impose restrictions to the use of a flexible plan, whereas modern houses have already embedded in their layout the restrictions of space use. Modern houses, by fixing more strongly functional values into space configuration, turn dwellings into synchronic oriented systems, rather than becoming diachronically adaptable.

1. Houses as sets of sectors

House organisation has changed through time, constantly adapting to respond to requirements imposed by social relations, codes of behaviour and family structure, as well as to express advances in building technology and to absorb new home appliances. The houses built in Recife, Brazil, for the last three centuries, are extraordinary examples of how changes in social structure deeply affect the way people build their houses and how they use space to materialise the abstract rules that govern the complexity of human relations.

It has been shown elsewhere that Recife's houses are organised in distinctive sets of spaces, arranged in form of domestic sectors (Amorim, 1997; Amorim, 1999). A sector is understood as a set of spaces grouped according to certain classificatory procedures, which take into account functional and social requirements. Sectors behave as meta-structures in space organisation, establishing the primary contours of space configuration and delimiting the possibilities of its transformation. This is so because while classifying, grouping and establishing principles for connecting spaces of the same sort, sectors reduce the field of possible arrangements and further limit its potential for changes.

These sectors and their configuration have also changed through time. A diachronic observation of Recife's house form demonstrates this transformation quite well. Pre-modern dwellings, which comprise exemplars of vernacular¹ and eclectic² houses, were arranged to reassure the unity of the family domain by setting spaces for interaction (the back room) and isolation (the alcoves) and turning them into a precise realm. This realm was set apart from the spaces solely dedicated to the formal entertainment of guests and the ones for the preparation of food, storage of goods, general services and accommodation of horses and

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19.1

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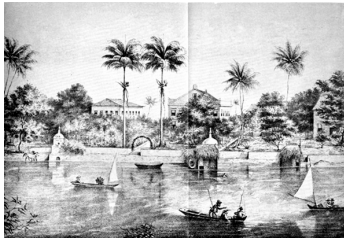
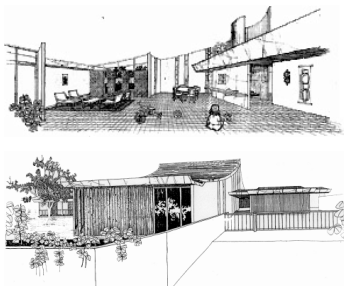


Figure 1a - Colonial Recife, around 1852, by Bauch, after Maior & Silva, 1992

Figure 1b - Eclectic Recife: Passagem da Madalena, around 1863, by Schlappritz and Carls, after Maior & Silva, 1992

Figure 1c - Meirelles House, by Domingues, 1968, after Amorim, 1999



19.2

slaves, and later, servants. These realms constitute the three main sectors of the pre-modern houses: the visitors, the family, and the service sectors. The visitors sector groups vestibule, entrance hall, waiting room, visitors' room, reception room, library, music room, and formal dining (contrasting with the *copa* as the daily dining space). The service sector groups spaces primarily occupied by slaves and/or servants, like kitchen, laundry, garage, backyard and servants quarters. The family sector groups the daily living spaces - dining room, veranda, family room, bathroom, bedrooms, and peripheral spaces, as *boudoir*, closet, and *toilet*.

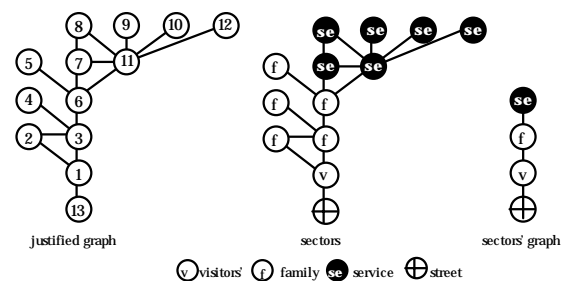
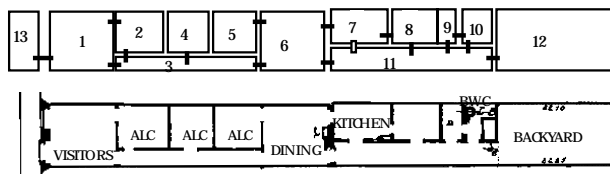
Modern houses, on the other hand, are organised differently, as social structure has changed. The strict and strong gender and racial inequalities perpetuated by the patriarchal system, which characterised local society for centuries, are weakened along the twentieth century, establishing a lesser degree of inequality in the family. This fact modifies the way sets of activities and users are grouped in space. Modern sectors are the following: the 'social sector' grouped the spaces that generated the interface among the inhabitants and visitors - living, receiving and dining areas; the 'private sector' provided seclusion for the members of the family - bedrooms and study room; the 'service sector' housed the activities that maintained the dwelling's life - kitchen, larder and servants' accommodation. To connect the three-sector system, transitional nodes, called 'mediator sector', were introduced. Their role was not only to tie the set of sectors together, but also to provide the necessary buffer zone between them.

These differences in sectoring domestic activities, however, are not sufficient to describe the subtle changes in housing space configuration through time. Indeed, form and space were shaped differently. Architectural styles denounce that, but space configuration seems to be as deeply affected as houses' epidermis. To prove that, the following sections present a diachronic analysis of domestic space organisation aiming at the description of how these dwellings have changed.

2. The structure of the sectors

The first step towards answering this question is to establish a methodological procedure capable to describe objectively the spatial structure of domestic sectors. One simple procedure is by looking at each individual sector and analysing their space configuration. For example, if they are tree-like or ringy, enclosed or opened to external access and movement. The very nature of the sectors themselves can express many of the intentions of the designers and inhabitants: by strongly isolating different sectors, different categories of users will meet each other under some circumstances, possibly meticulously predicted; by highly integrating different sectors, different categories of users will be allowed to interact in a more informal basis. The sequence of justified graphs in figure 3, corresponding to a random selection of pre-modern and modern houses of Recife, exemplifies these cases.

Figure 2. Sectors representation of a typical colonial house



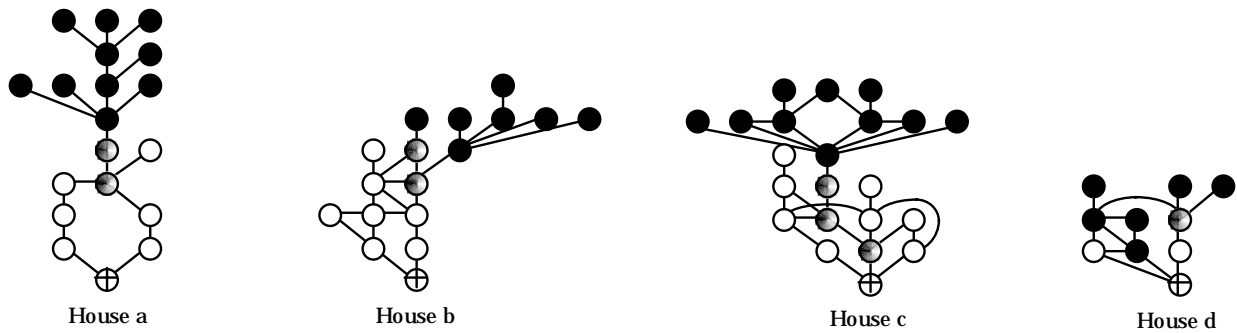


Figure 3. Pre-modern and modern exemplars

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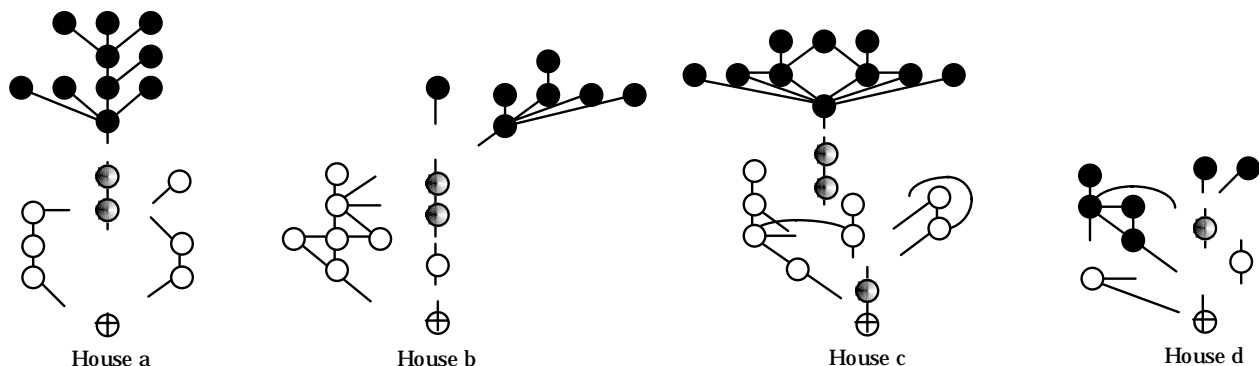
2.1. Isolating the branches

Let us isolate each sector from its neighbours and observe them individually (figure 4). Some graphs are either composed of a single element or a high percentage of the total number of convex spaces of the house. Size; can be a sign of program's complexity, or a simple multiplication of standard rooms, like bedrooms. Some sectors are tree-like, mostly composed of *a*- and *b*- type spaces,³ appearing either as deep structures (house a) or shallow bushes (houses a and b). Tree-like systems allow for high control of movement, effective for privacy and isolation, or formality and symbolism.⁴ Others offer choice of access and movement. Some are formed by a single ring (house d), others by multiple rings (houses b and c). Some rings are local and trivial (houses b and c), with no substantial effect in the overall configuration of the sector, but others include the whole sector (house d).

Each one of these particular configurations can be represented by their degree of ringiness. The space-link ratio (Hillier et al., 1987) has been systematically used in space syntax studies to account for the degree of ringiness of a system. There is, however, an intrinsic problem in the use of this measure: it does not allow a comparison between systems of different sizes, because the value that expresses maximum ringiness of a system depends on its size.⁵ This distortion can be solved by using a more accurate measure: the 'relative ringiness', which is 'the number of distinct rings over the maximum possible planar rings for that number of points: $2p - 5$, where p is the number of points in the complex' (Hillier & Hanson, 1984, pp 154). The proposed equation can be adapted to account for the number of connections of the graphs. The 'relative connectivity' (RC) is expressed by the equation,

$$RC = \frac{c - (p - 1)}{2p - 5} \quad [1]$$

Figure 4. Isolated sectors



where RC stands for relative connectivity; c for the number of connections in the complex; and p for the number of nodes in the graph. RC value ranges from 0.00, a tree-like graph, to 1.00, the highest possible number of rings in the graph (Amorim, 1999: 295).

2.2. Connecting the branches

As sub-systems of a complex, the sectors are interconnected in order to make it work according to its requirements. Some sectors are extremely isolated, having a single access to/from the rest of the system (houses a, b and c) (figure 5). This connection is either at the end of a long sequence of spaces (house a) or at the configurational centre of the sector (houses b and c). A restricted and easily controlled access determines a clear identification of the sectors' boundaries. Crossing these 'clear boundaries' without permission could be understood as a transgression of social codes of behaviour.

These highly controlled sectors contrast with, for example, the ringy sector in house b, highly permeable, allowing access from different spaces to neighbour sectors, contributing to blur their common boundaries. These 'fuzzy boundaries' express a contrasting figure with the sectors seen previously: movement is less controlled and the interface between the users

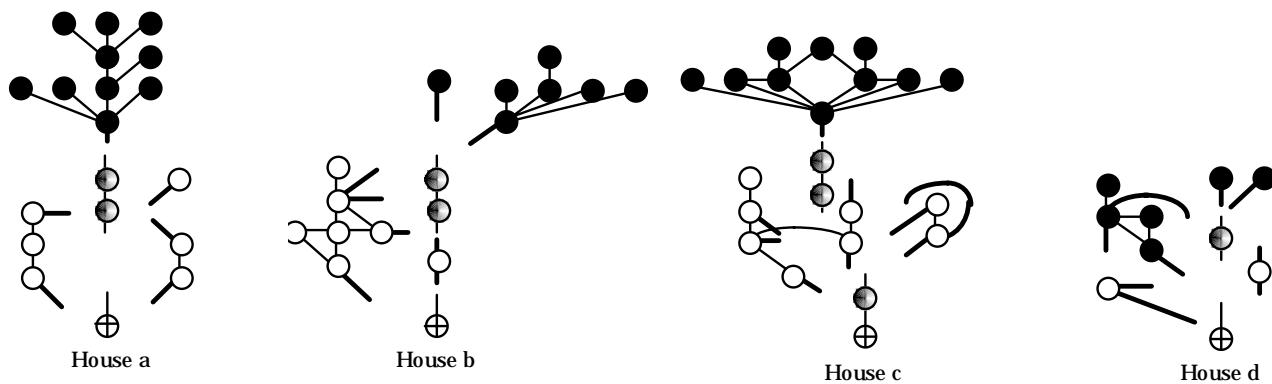


Figure 5. Justified graphs with the sectors' connectivity highlighted.

of permeable sectors is likely to occur with more frequency and informality, unless these boundaries are also controlled. The identification of spaces that control such boundaries seems to be of vital importance.

These different configurations can also be quantified by the number of connections between the sectors. The 'sectors' connectivity' can be relativised by the total number of spaces which compose the sector, as seen in the equation:

$$DP = \frac{sc - 1}{n} \quad [2]$$

where DP stands for 'degree of permeability'; sc for sectors' connectivity; and n for the number of spaces in the sector. When the sectors' connectivity is equal to 1.00, the degree of permeability is said to be 0.00, as it describes the simpler form of permeability between spaces, and therefore sectors (Amorim, 1999: 297). The degree of permeability, different from the relative connectivity, can assume values over 1.00, and well over it. When the degree of permeability is very low (clear boundary), it means that the spatial structure strongly isolates activities and categories of users from the rest of the system. When the value is high (fuzzy boundary), the interaction between different categories is more probable.

2.3. Towards a sectors' typology

These two measures, the degree of permeability (DP) and relative connectivity (RC), are the necessary tools to examine sectors' configuration. Figure 6 plots RC values, or sectors' intrinsic properties, on the horizontal axis, and the DP values, or sectors' extrinsic properties, on the vertical axis, and establishes four quadrants, limited by plus-minus boundaries. The vertical boundary is defined by the average 0.50 RC value. The horizontal boundary, however, is more difficult to establish, because DP values have no specific range. This boundary was assumed to be 1.00, as it represents the first level of 'saturation' of sectors' connectivity, i.e., when they exceed the number of spaces by one. However, it is highly improbable that this degree of permeability is achieved in large complexes. For this reason, the vertical boundary is stretched to form a 'transitional area', in which the relative permeability of large complexes may be considered. This transitional area is then defined by a numerical series, which generates the same DP value, neutralising the increase of sectors' size with less number of connections. The series is formed by the pairs 2:2, 4:3, 6:4, 8:5, 10:6, ... , in which the first numeral is the number of spaces of a sector and the second, its connectivity. This series always results in a DP value of 0.50, which is taken as a boundary for the transitional area.⁶

The 'sectors' box' suggests four types of relationships between the measures, hence generating four types of sectors. The first type has low DP and RC values (-/- quadrant), combining clear boundaries and tree-like structures. This is a strongly programmed form of spatial organisation, where movement is highly programmed and categories of users are highly differentiated. The second type has clear boundaries (low DP), but its internal structure is very ringy (high RC). In this type (-/+ quadrant), the relation between sectors, i. e., between categories of users, is highly controlled, but the interaction amongst sector's users is unprogrammed. The third family (+/+ quadrant) groups fuzzy bounded (high DP) and ringy (high RC) sectors, which are expressions of weak programs, allowing the highest possible interaction amongst users. The last family comprises fuzzy and tree-like sectors (+/- quadrant), which permits intense interactions with other sectors, but are strongly categorised.

3. On the structure of Recife's domestic sectors

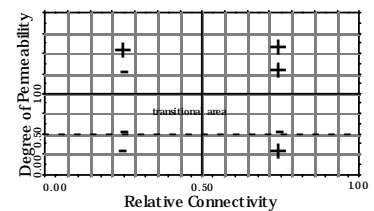
This procedure is used to model a sample of domestic buildings, composed of nine colonial, ten eclectic and twenty modern dwellings, selected from a larger sample of fourteen colonial, thirty-two eclectic and two hundred and four modern dwellings studied previously (Amorim, 1999). They represent the variety of sectors' arrangements found in the larger sample, including units with and without mediator sectors, but also with different architectural forms, expressed by the diversity of number of floors, geometrical and topological sizes, and architectural style (figure 7).

The houses are represented as 'minimal living complexes'⁷ rooted from the outside (the carrier space). The results are firstly observed within each sample (colonial, eclectic and modern) in order to identify general properties and odd occurrences, and then the samples are compared to assess similarities in their sectors' composition.

3.1. Looking at each house

Figure 8 plots the respective RC and DP values for each sector of the respective samples. Colonial sectors are relatively homogeneous: in all, but two cases (C6 and C14), the colonial sectors are tree-like, and tend to present similar RC and DP values ranging from 0.50 to 1.00.

Figure 6. The 'sectors' box'



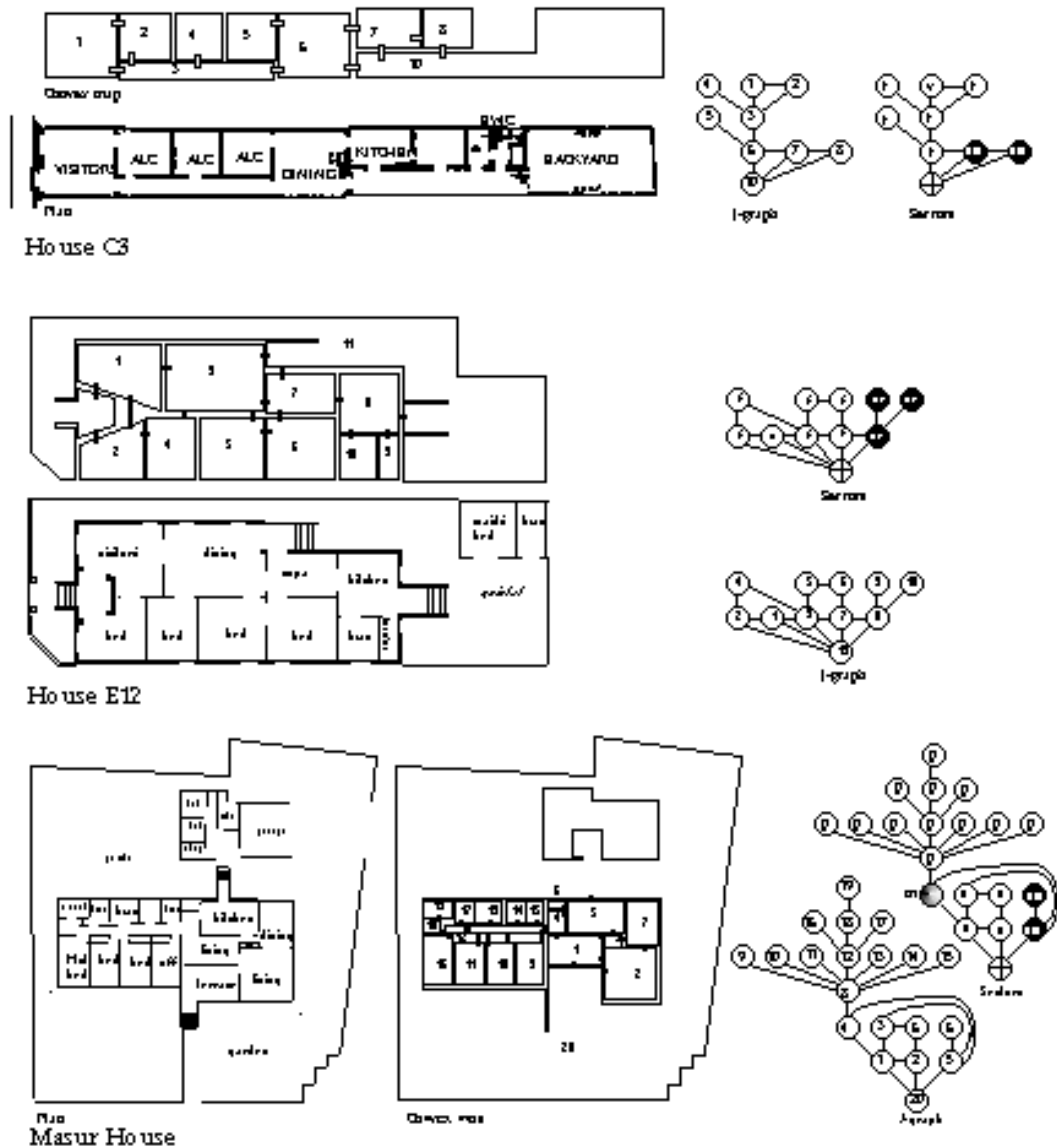


Figure 7 - plans and justified graphs of selected houses

Eclectic houses, on the other hand, are more heterogeneous. Their DP and RC values differ more dramatically in every house. Houses E4, E12, E22, E24 and E26, present sectors with DP values above the 'transitional area', but also within it. Heterogeneity is also seen in the combination of ringy and tree-like sectors in all houses, but two (houses E20 and E24). This more complex articulation of sectors is reinforced by the significant differentiation of the DP values of the ringy and tree-like sectors, the first being normally more bounded than the second. A high degree of permeability is another important distinction of the eclectic houses. All dwellings present DP values that are well above 1.00, particularly houses E2 and E20, formed by fuzzy sectors.

The modern houses are also complex in their sectors' composition. The 'sectors' boxes' of the non-mediated modern houses are interestingly similar. Their sectors tend to have clear boundaries and be organised as trees, but when rings are present, sectors' RC values are low and similar to each other. However, the similarities between the houses seem to be confined

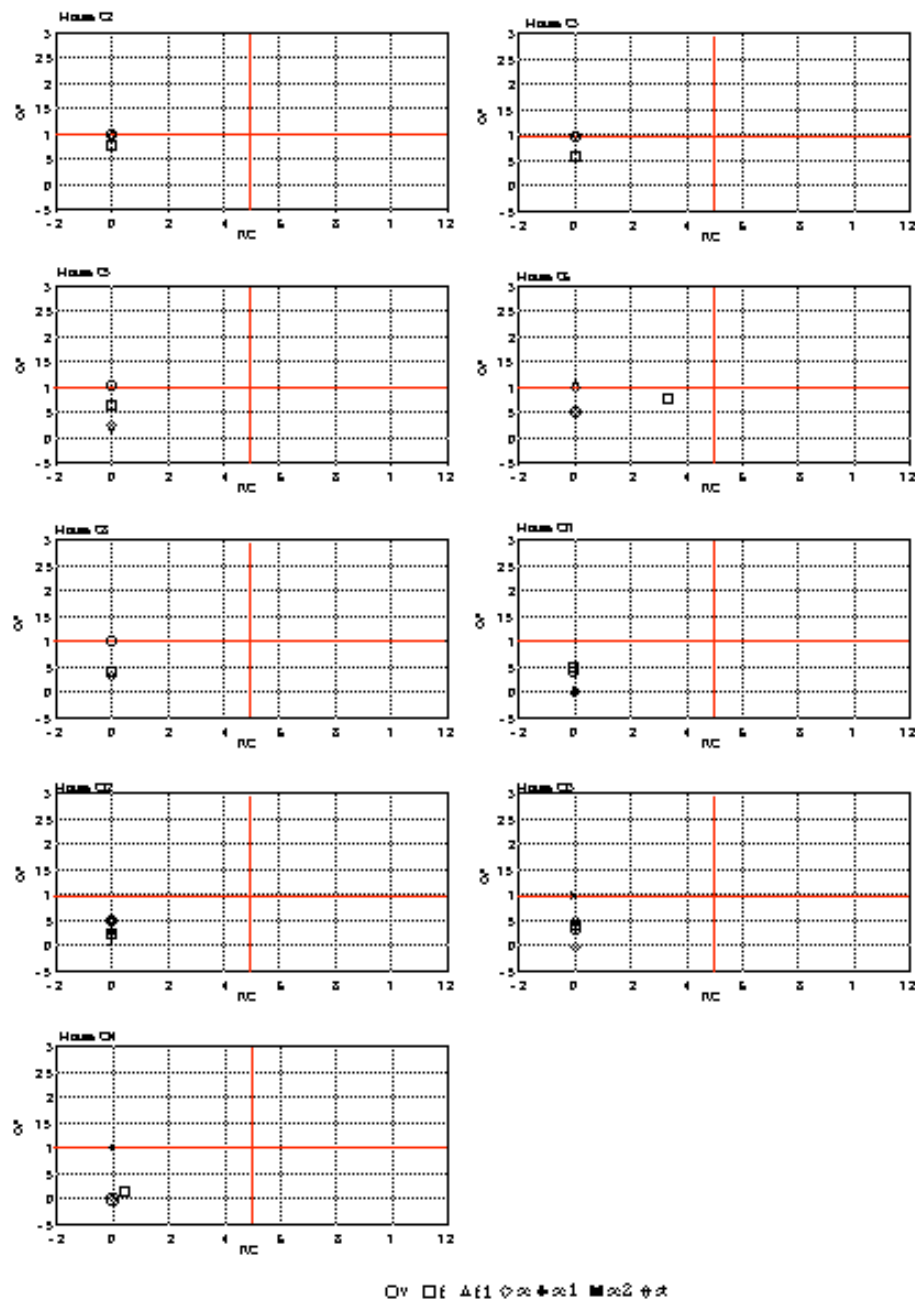


Figure 8a. Colonial houses

to these general properties. Indeed, the variety of RC and DP values of each individual sector in different houses again proves that, when observed individually, modern houses tend to demonstrate how diverse and complex their overall structures can be.

Heterogeneity is also found amongst mediated houses, with values ranging more widely. Some tree-like houses, like Melo or Svenson, have sectors' boundaries either highly fuzzy or absolutely clear. Others, like Domingues house, have sectors with degrees of permeability within the transitional area. This variety in the sectors' structures is also perceived in ringy houses (Campello, Castro and Masur houses), which have social sectors with a relatively high RC value (0.29 to 0.33).

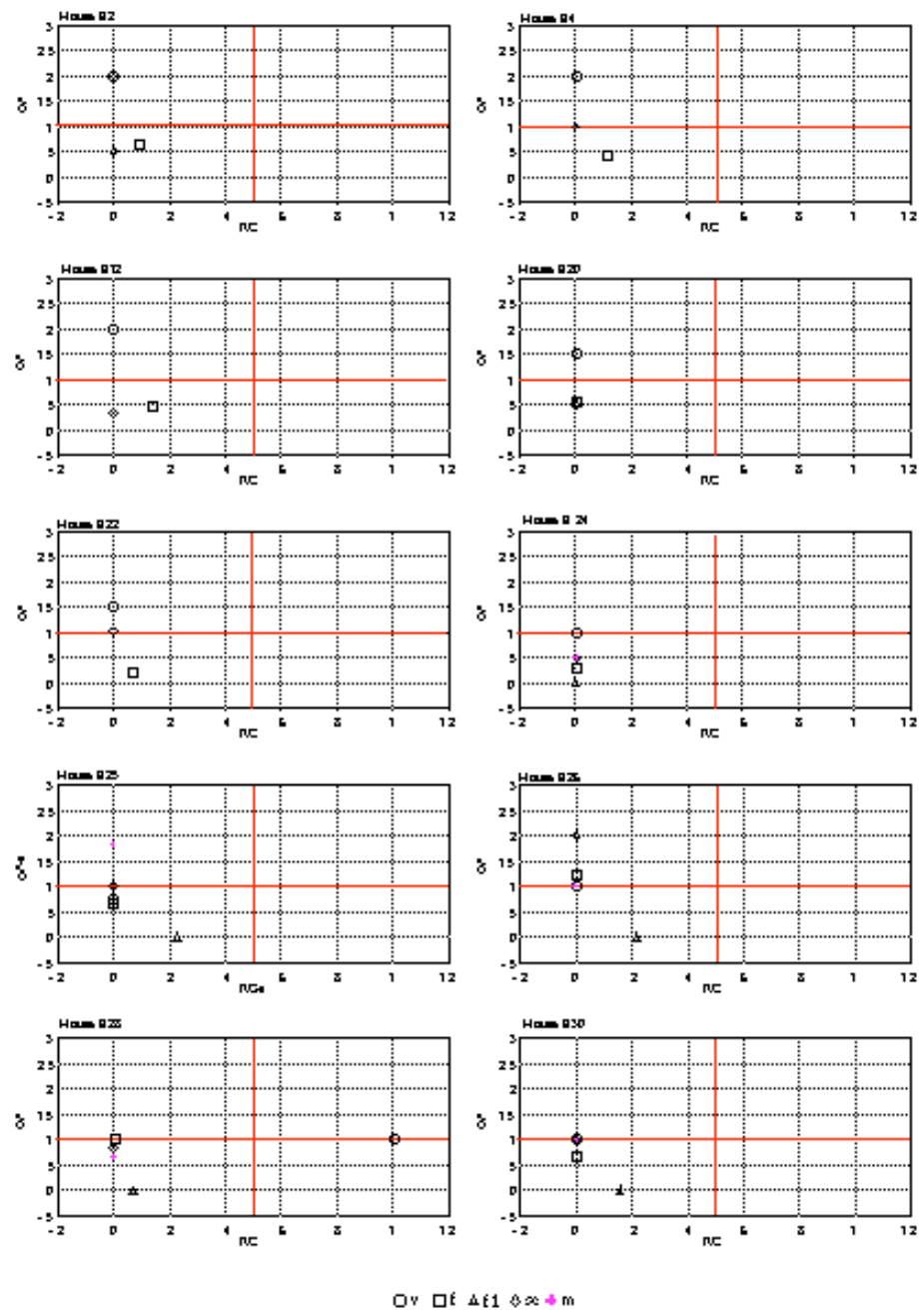


Figure 8b. Eclectic houses

3.2 Looking at the domestic sectors

Let us study the sample by isolating the main pre-modern and modern sectors in independent 'sectors' boxes' (figure 9). This simple procedure makes evident, for example, the similarities between the colonial visitors' and service sectors. Both are tree-like and have DP values ranging from 0.00 to 1.00, with a mean DP value of 0.64 for the visitors' and 0.45 for the service sector. Despite the relative fuzziness of some of these sectors, whose values are close or equal to 1.00, the majority of cases present values equal or lower to 0.50, therefore below the 'transitional area'. This demonstrates that both sectors are susceptible to a high control of access and movement, both within and between them.

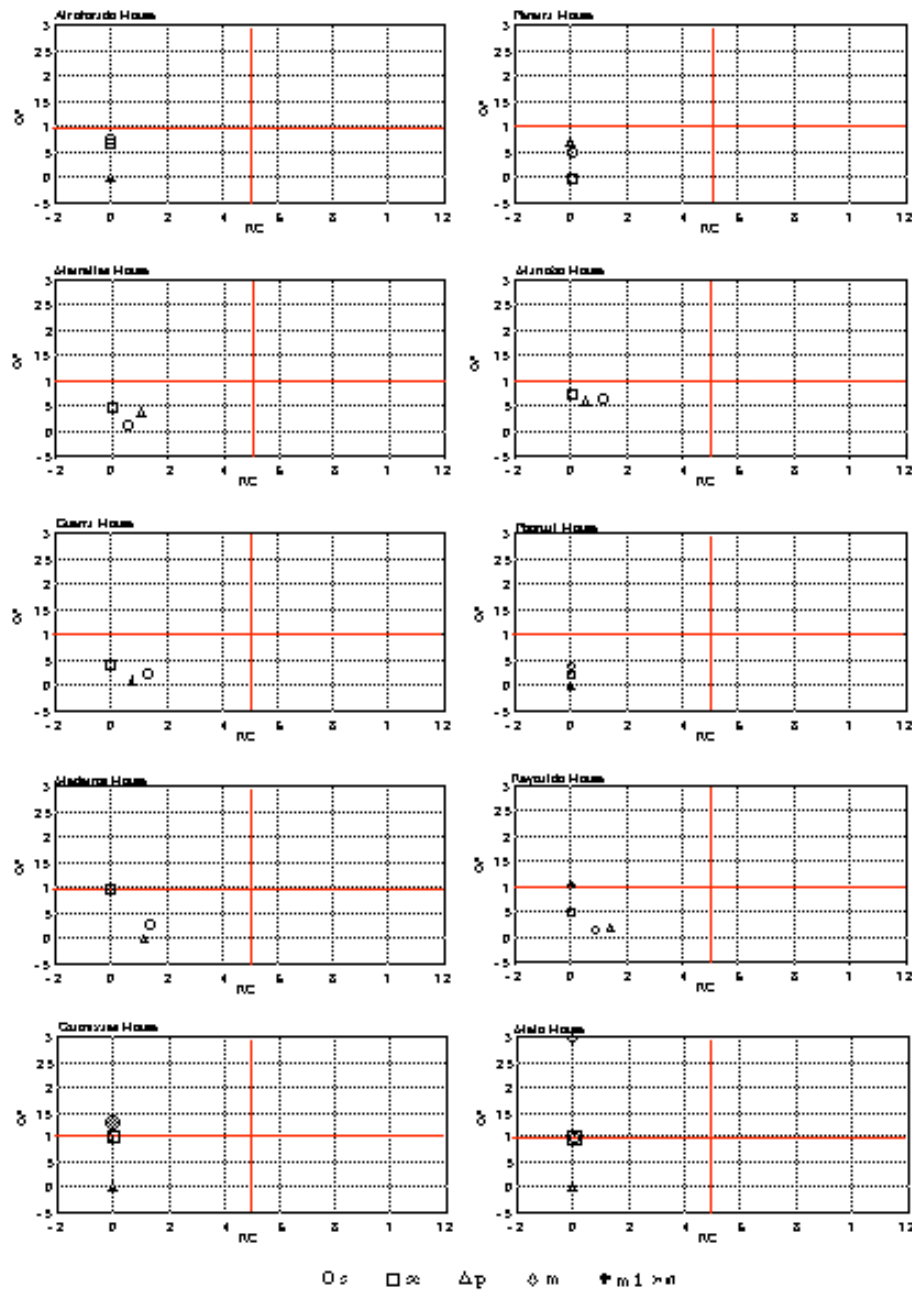


Figure 8c. Modern houses

The colonial family sector is manifested in more diverse forms. It is the only colonial sector to present positive RC values (houses C6 and C14). All family sectors lie in the -/- quadrant; however, a considerable number of cases (houses C1, C3, C5, C6 and C11) stays in the transitional area, demonstrating the relative fuzziness of the colonial family boundaries.

The 'sectors' box' also makes evident how the eclectic houses reshape the functional organisation of the colonial houses. The eclectic visitors' sector, albeit remaining tree-like, is more open. Nine out of ten eclectic dwellings present DP values higher than 1.00 and the remaining case (E25) has a relatively high DP value (0.75). This openness is possible due to the proximity between receiving and dining rooms, and the connection between visitors' spaces and bedrooms. Fuzzy visitors' boundaries were essential for a diachronic use of

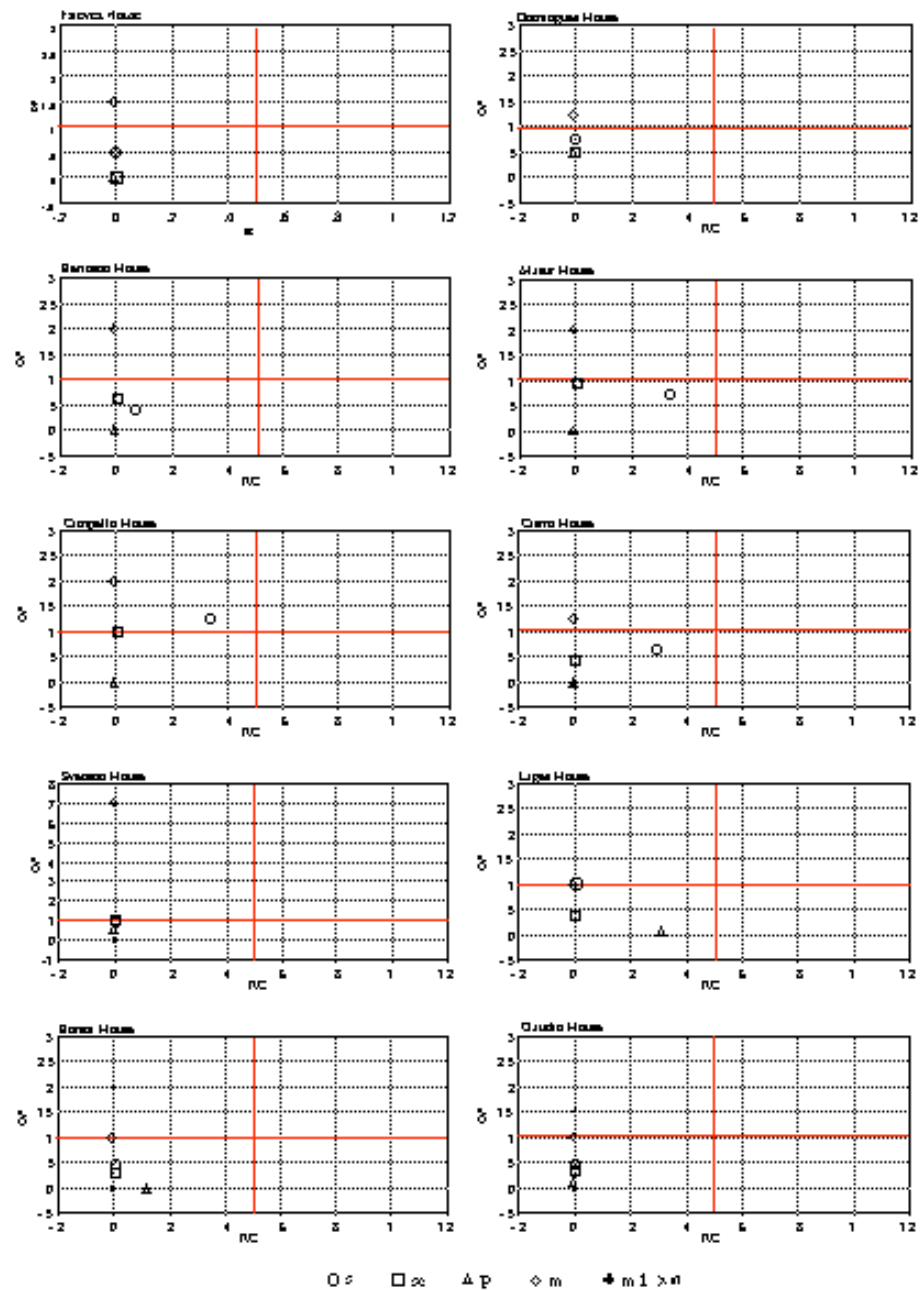
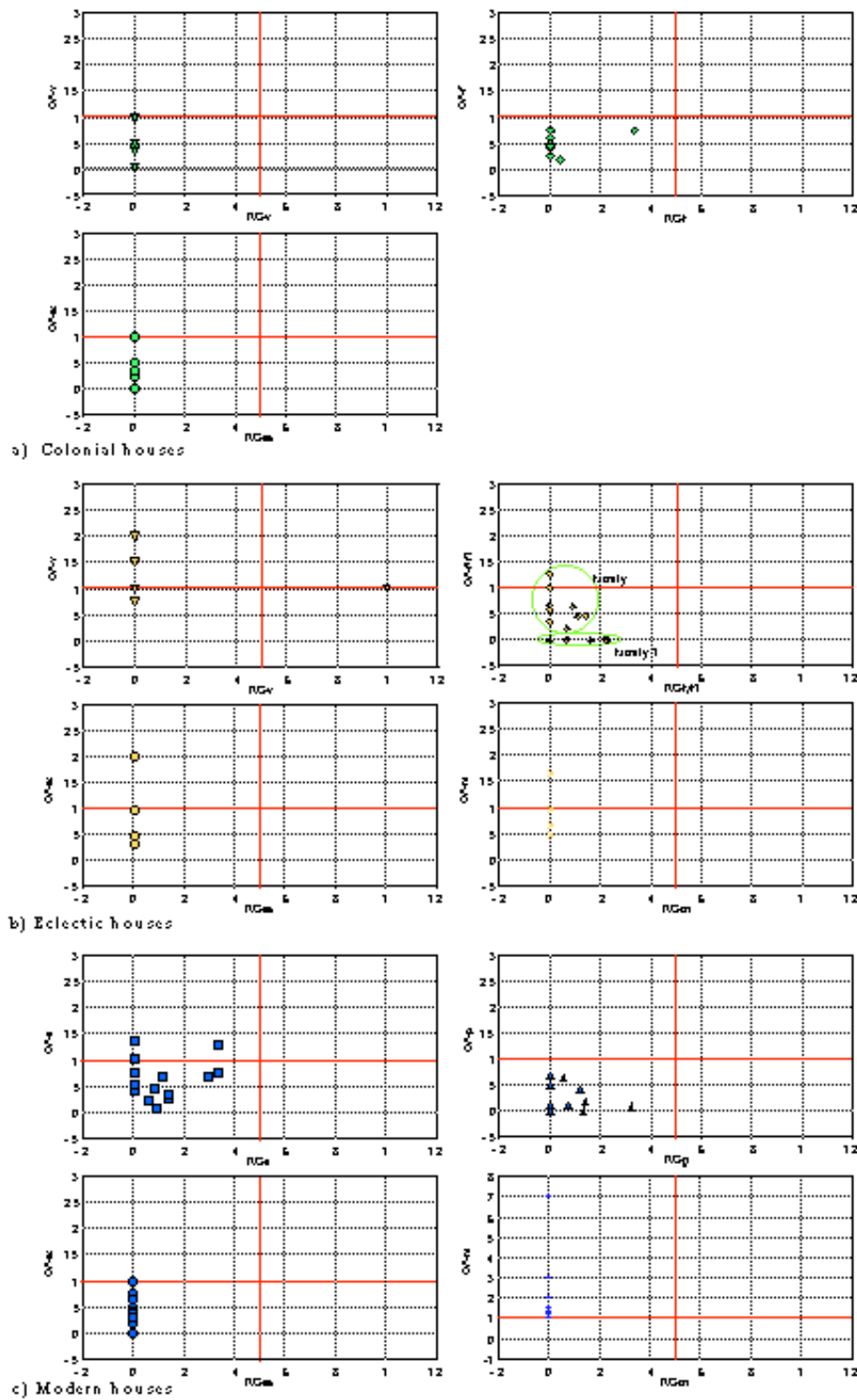


Figure 8c. Modern houses - continued

eclectic houses, adapting their layouts to different circumstances, either by closing or opening doors, therefore expanding or reducing houses' territories, or by offering alternative accesses within and through sectors'.

The eclectic service sector is as tree-like as is the colonial one, and, in all cases, but two, it is composed of less than three spaces. This fact explains, in part, the absolute lack of service rings, but does not justify their absence, since even in larger sectors, rings are not found. It seems that the absence of rings is determined by its operative nature, which induces the location of the kitchen at its core and disperses the remaining service spaces around it. However, the boundaries of the eclectic service sector are fuzzier. The majority (60%) of the eclectic houses have DP values equal or higher than 1.00, confirming the strong investment of eclectic houses in opening up sectors' boundaries in order to establish a higher degree of flexibility in space use.



The eclectic family sector is on average smaller than the colonial family sector (5.8 and 8.0 convex units respectively), due to the isolation of the bedrooms in an independent sector in the first floor of eclectic dwellings. The eclectic family sector is more open and has more rings than has its colonial counterpart, with 0.62 average of DP and 0.08 of RC, against 0.50 and 0.04 for colonial houses.

Figure 9. The main pre-modern and modern sectors isolated in the 'sectors' box'

The twentieth century reinforces the need for individual privacy, as a result of the decay of patriarchy and the development of new forms of social solidarity. The effect on houses' layout is the slow, but progressive isolation of dormitories and the introduction of mediating spaces. The private 'secondary family sector', embryo of the modern private sector, has the highest RC values of all eclectic sectors, as a result of its thoroughfare bedrooms. These high values contrast with their clear boundaries necessary to sustain privacy and isolation within the household complex. The mediator sector buffers the interference of other domestic activities with the reserved sector. This sector has reduced RC values, but the lack of rings is compensated for their high DP values (average of 0.97).

Mediation, however, is a typical characteristic of modern houses that is pervasively present, controlling access from sector to sector, and preventing undesirable encounters. Its boundaries are as fluid as possible (but sometimes lockable), as its main function is to serve as a buffer zone between sectors. All modern mediator spaces have DP values higher than one, and the highest average DP value of all sectors (1.88). These properties are similar to those presented by eclectic dwellings, indicating that some sectors keep their structures intact through time, regardless of changes which have occurred in the general composition of their layouts and in the way the houses are sectorised.

Eleven out of the twenty modern houses have service sectors composed of more than three convex spaces (average of 3.55) but, despite their size, they are organised as tree-like structures, reproducing the colonial and eclectic models. This fact confirms that the lack of rings is not a consequence of the size of the service sector, but of its functional nature. It also expresses the consistency with which this operative sector is spatialised, regardless of profound changes that occurred in the domestic environment, such as the abolition of slavery in 1888, the consequent availability of domestic servants and the modernisation of domestic appliances, cooking procedures and products.

The tree-like form of the service sector is indeed a common link between pre-modern and modern houses, but modernity idealised fuzzier boundaries. Six modern dwellings have DP values equal to 1.00. This increase of DP values seems to be, paradoxically, a consequence of the introduction and proliferation of mediator sectors in modern dwellings. This paradox has a simple explanation: modern mediation establishes alternative routes from/to the service sector, adding connections between dining and kitchen and alternative routes to social and private areas.

Modern private and social sectors are the only ringy modern sectors. This property confirms that spaces for communal use and for individual privacy are the only classes of spaces to be interconnected through rings, but with different aims: in social sectors, rings are introduced to integrate receiving and living activities and to generate a more lively and informal atmosphere, whereas in private sectors, rings increase the control and surveillance of parents over their children.

If the existence of rings unifies social and private sectors, the characteristics of their boundaries could not be more different. The private sector has the clearest boundaries of all modern sectors (mean DP of 0.11), generating the much praised individual privacy, which is obviously stronger in the mediated modern dwellings than it is in the non-mediated ones (0.11 and 0.30, respectively). It seems that the evolution from the eclectic secondary family

sector to the modern private sector was made by reinforcing the isolation of the individual cells, therefore reducing the mean RC values of the modern houses, and establishing the mediator sector as the spatial means of control and isolation of the private sector.

Spaces for entertaining guests changed more significantly in modern days. The average size of the modern social sector is higher (6.15 convex units) than are the colonial (3.78) and eclectic (1.9) visitors' sectors. This is perhaps one of the reasons why the modern social sector is more bounded than its preview versions, given that the likelihood of opening up the boundaries of all its spaces is small. The average DP value for the modern social sector is 0.64, whereas the same value for the colonial houses is 0.69 and for the eclectic houses is 1.39. Despite presenting the lowest DP values amongst the sectors dedicated to entertaining guests, only six of the modern dwellings have values below 0.5, while twelve houses have social sectors which are within the 'transitional area'. In summary, spaces for entertaining guests evolved to form ringy, but clearer, composition.

4. On the evolution of the structure of the domestic sectors of Recife

One way to visualise and evaluate the differences between the various forms that domestic sectors assumed through time is by comparing their typical profiles (figure 10). The graphs are presented in an enlarged scale, zooming into the -/- and -/+ quadrants. The 'boxes' draw the fundamental lines of domestic sectors' changes. Receiving areas changed from the controlled tree-like model to become an open and ringy structure within the eclectic dwellings, but with its boundaries diachronically controlled by closing and opening doors. Modernity abdicates the use of these physical boundaries by reducing fuzziness and ringiness to a level in which space itself would handle the need for privacy and sociality in the domestic ambience. Therefore the usefulness of mediators, introduced by the eclectic dwellings, was only fully explored by modernists. Service spaces kept the tree-like form as its basic model, but altered their relations with the adjacent spaces, from the colonial closeness to the eclectic openness. Modernity readjusted their position just above the 'transition line' (0.50) establishing the parameters for a functional and isolated modern service zone. Individual privacy is conquered by the eclectic dwellings, but its form is yet to provide a full privacy, because of the thoroughfare bedrooms. Full individual privacy is finally achieved with the drastic reduction of internal rings and the establishment of the a-type cell as the paradigmatic configuration for the modern bedroom.

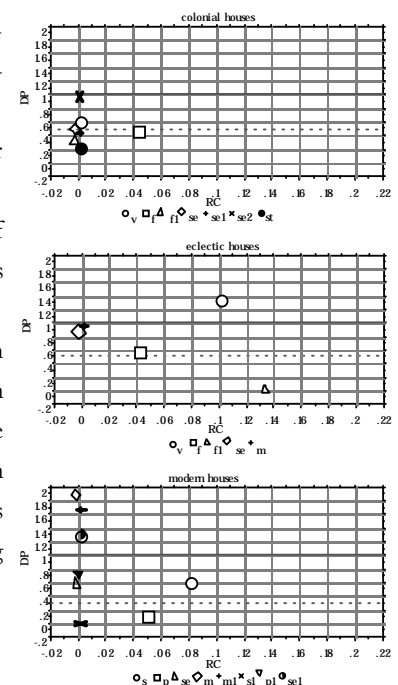
Let us now summarise our main findings, before establishing a general interpretation for the phenomena:

a. Pre-modern and modern domestic sectors of Recife tend to occupy the -/- quadrant of the 'sectors' box', with the exception of the mediator sector, which in most of the cases is located in the -/+ quadrant.

b. Spaces for receiving and living have adapted themselves more significantly through time, while keeping high degrees of permeability. The more significant changes occurred in their internal configuration. In the patriarchal house, visitors were guided through a tree-like system, usually of small size. The 'emancipated' eclectic dwelling introduces rings and open up its boundaries mainly amongst the ground-floor houses. The modern house establishes itself between the two models, by keeping the fuzziness of the eclectic dwelling, but reducing the number of its internal rings.

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Figure 10. The typical pre-modern and modern sectors



c. Mediator and service sectors present a strong diachronic stability in their design. The rare exceptions identified in the sample result from the variation on the fuzziness of their boundaries, but their tree-like nature is kept intact;

d. Mediation is more effective and central in modern than in eclectic dwellings. This is clear in the increase of the DP values of the modern sectors due to the connectivity to the mediator sector;

e. Privacy is slowly reinforced from the colonial communal family sector to the emergent ringy eclectic secondary family sector, to the clear bounded and tree-like modern private sector.

Hanson remarks that ‘as evidences accumulate, it is becoming apparent that houses in many parts of the world exploit tree-like configurations to organise domestic space, though this is by no means universal’ (Hanson, 1998: 272). Indeed, pre-modern and modern dwellings of Recife present very low RC values. The colonial houses contain the least number of rings amongst the samples. If ‘tree-like homes share the property that movement about the interior and in relation to the exterior is highly controlled and predictable from the layout’ (Hanson, 1998: 272), then the colonial houses spatialised the strict patriarchal society which forged their forms.

Changes in Recife’s society reformulated the ‘colonial trees’ with the increase of rings in their layouts. The ‘eclectic rings’ are the sign of changes, but not necessarily of social and familial informality. Rings bring more possibilities of space use, but exercising control over the potential movement generated by the spatial configuration is yet another form of expressing social inequalities. This seems to be the case within the eclectic dwellings.

In summary, colonial houses rigidly programmed, in a sense that their sectors have the clearest boundaries of the samples, and are symmetrically arranged in tree-like forms. Eclectic dwellings, on the other hand, form a distinct set for their high degree of permeability and relative connectivity. As exemplars of a transition era, between patriarchy and modern family, the eclectic dwellings seem to propose a layout in which flexibility would permit the survival of some aspects of the patriarch domestic model, but would also allow for more open forms of space occupation.

Modern houses, in their own spatial style, re-establish the tree-like form as a model for domestic organisation. ‘Modern trees’, however, are less pronounced and, therefore, less rigid. They result from a combination of an elaborate spatial configuration which offers a certain degree of informality within the living areas and a certain degree of seclusion for its private precincts. They form a third model, which is neither as programmed as the colonial, nor as unprogrammed and flexible as the eclectic dwelling.

5. Diachronism and synchronism

The study revealed that the passage from the colonial to the modern way of living established new forms of space-social relations. The spaces for communal use by the members of the family and the spaces for receiving and entertaining guests were initially isolated in different territories of the house, in order to sustain and reinforce the privacy of the family. This patriarchal model helped to keep the unity of the family and the control of the patriarch over the other members of the household. In this sense, social codes of behaviour pervaded over the potential occupation of spaces; by restricting accesses and delimiting physical barriers between the sectors.

With the decay of the patriarchy and the establishment of a modern society, individuality and privacy became cherished as essential personal needs. The isolation of the spaces for the use of individual members of the family brought the first fundamental change in the sectors' organisation of Recife's dwellings. The bedrooms were isolated in a deep and segregated part of the house, forming the modern private sector, already enunciated by the eclectic secondary family sector. Spaces for the communal use of the family were grouped under the social area, also used for receiving and entertaining guests. This was supposed to represent a modern attitude towards a more spontaneous and practical lifestyle. A transparent showcase of what a modern and practical daily life should be now substitutes the eclectic visitors' room repository of family's memories and the reliquary of their history.

In the first set of houses, visitors are solemnly received and guided room-to-room in a procession of rehearsed and independent acts. This sequence of independent acts is permitted by the physical isolation of distinct rooms and the existence of alternative paths through the dwelling, allowing the secrecy of movements and the avoidance of undesirable encounters between dwellers and visitors. Thoroughfare rooms are the essential spatial elements in this flexible plan, along with their doors - precise architectural element that controls both movement and visibility. Modern dwellings rearrange the ceremony by turning it transparent. The acts seem to be the same, but now everything tends to be shown. The passages from act to act - from the light conversation at the living room, to the dining table to the digestive cup of coffee at the fresh veranda, are present at the first stages of the receiving ceremony as the spatial continuity from space to space makes anticipation possible. In more radical plans, rather rare though, cooking and serving are also under the scrutiny of visitors: this is also part of the ceremony.

Spatial transparency, however, establishes a conflicting interest in modern dwellings: openness for receiving moments, versus permanent isolation for individual and private spaces. Buffering is the solution for keeping spatial transparency and making domestic territories isolated. Indeed, in this less controlled society, in which codes of behaviour are more relaxed, space is used as a form to establish isolation between houses' territories by building up spatial depth, in substitution to both physical (doors and walls) and social barriers. The mediator sector allowed for the much-needed flow of space, but constructed 'virtual' or 'implied' boundaries between the sectors.

Considering the results of this study, a simple argument can be used to explain the changing forces which forged domestic spatial structures in Recife. Pre-modern spatial structure is primarily a social manifestation, controlled by social codes, whereas the modern space-diagrams are dominated by spatial considerations. The first is reinforced by social codes of behaviour, whereas the second is constituted by subtle spatial moves. The first imposes restrictions to the use of a flexible plan, whereas the second has already embedded in its layout the restrictions of space use. Modern houses, by fixing more strongly functional values into spatial configuration, turn dwellings into synchronic oriented systems rather than becoming diachronically adaptable. Ironically, the much mentioned flexibility of modern plans has not fully materialised in Recife's houses. Indeed, space flexibility seems to constitute one of the many myths that surround modern buildings.

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Notes

1. Units of Portuguese influence, currently referred to as colonial buildings.
2. Expression of the historicist 'fashion', typical of late nineteenth and early twentieth centuries
3. There are, according to Hillier (1996), four topological types of space: a-type space has one link; b-type has more than one connection and lies on a tree; c-type has more than one connection and lies on a ring; and d-type space has more than two connections and lies at least in two rings
4. As Hanson has suggested, 'tree-like domestic space arrangements produce strongly programmed forms of domestic space arrangements' (Hanson, 1998: 278).
5. In a four-space system the maximum space-link ratio is 1.75, whereas in a six-space system it is 2.16, in a seven it is 2.28, and in an eight it is 2.37.
6. These boundaries, however, are purely theoretical. It is possible that extensive empirical studies, with the application of this method to diverse building types and domestic buildings as well, may redefine these abstract low/high boundaries.
7. Minimal living complex is the least continuous set of interior convex spaces that form a building.

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