Discourse versus design

a comparative analysis of expected spatial performance as stated in briefs and laid out in plans

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Abstract
This paper addresses coherence between design schemes and designed performance by applying space syntax analytical techniques to building proposals, in order to verify whether some spatial qualities and patterns of use sought by the designer, as described in the brief, correspond to spatial properties that tend to enable those qualities and encourage those uses. Accessibility and visibility properties of integration were examined in two pairs of plans developed and submitted as final examination design pieces required for attaining of architect in four architectural schools in Brazil. Plans were selected from a database compiled as part of a research project to assess the output of architectural training at graduate level. A main criterion for selecting the plans was the designer's explicit indication of the ways he or she expects the spatial structure to encourage certain patterns of use and encounter. The two sets of plans refer to building types that relate people to people – homes for the elderly – and people to knowledge – museums (Markus 1987). Results suggest that coherence between design and discourse derives more from intuitive and empirical knowledge – "ideas we think with" – than from an analytical evaluation of morphological properties – "ideas we think of".

The case

This article results from a research project[1] in which design proposals presented as academic work are analysed and evidences of coherence between design schemes and designed performance are very-fied. Besides assembling and classifying a comprehensive sample of proposals now being structured into an online database[2], researchers sought to evaluate the recent output of architectural schools in Brazil, in order to identify whether some spatial qualities and patterns of use aimed by the designer, as described in the brief, find parallel in design actions thought to enable those qualities and encourage those uses. The examined sample comprised 135 design proposals submitted between 2001 and 2007, as final design pieces for attaining the degree of architect, herein referred to as TFGs (Trabalho Final de Graduacao or Graduation Final Work), by students of eight schools of architecture located in seven states, and in the federal capital, Brasilia[3]. They were investigated following four lines of inquiry: (1) the methods and techniques chosen by the authors to analyse design pieces – buildings, open spaces etc – used as reference for his/her proposal; (2) concepts and means of representation; (3) person/environment relationships as a basis for the design process; and (4) relations between space configuration and uses as stated in the texts and manifested in design. The presence of a morphologic perspective as part of the design principles – the latter approach – will be the one focused here.

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We sought to find out whether the idea of spatial form – not only as a reflective or communicating entity but also as an actuating structure that can facilitate, inhibit or even impede social practices – could be identified in the textual descriptions that explain (valorise or justify) the proposals and, if so, how written ideas unfolded into spatial properties in the plans. The hypothesis, drawn from our experience in teaching and design, was that architects tend to have a much stronger hold of "the laws of society to space" than of "the laws of space to society" as defined by Hillier and Hanson (1984), thus being more at ease when explaining how they "expect" their proposals to function than when manipulating space to achieve the desired performance.

By comparing spatial configuration and purposive intention, as laid out in plans and expressed in texts, we sought to establish an initial framework of procedures to be expanded into an analytical model for evaluating design, as a support to teaching and research activities. The selection of the two pairs of plans investigated here followed a set of criteria which resulted from the perusal of the descriptive texts[4] that accompanied the plans. The main requisite for selection was the number and completeness of mentions concerning performance alongside the clarity of spatial representations; next came the recurrence of the buildings functional character in the recent academic output; and its pervasiveness in the sample as well as in the literature, as an item of contemporary architectural production.

Four sets of spaces were considered of particular interest to investigate the potential designed interface among users of a building (or building complex) and between these and visitors or outsiders: indoor and outdoor communal spaces and interior and exterior transition spaces.

Two design proposals of residences for senior people and another two, of museums were selected as object of investigation. As is the case in many western countries, the Brazilian population is aging steadily (Valenza 2008) so that the conception of appropriate buildings to accommodate senior citizens has become a frequent theme in the design agenda. The same applies to cultural entertainment, which has been recurrently viewed worldwide to serve all sorts of purposes, most of which associated to urban sustainability by way of various courses of actions, especially economic and symbolic.

The proposals examined were thus: (i) a geriatric residence in Caico, a Northeastern hinterland town[5]; (ii) a public institution for the assistance of the elderly in Sao Paulo[6]; (iii) a museum (the Panini museum of comic strip history) in the old town centre of Rio de Janeiro[7]; a museum of contemporary art to be located in the Pampulha park[8] in Belo Horizonte.

The analytical procedures developed for each project, to be presented henceforth, stems from the intended spatial performance stated in the written explanatory material. "Control of access", "socialization area", "interaction among residents", "ease of movement" and "privacy" of certain spaces were the requisites most recurrently referred to in the briefs that accompany the residences for the elderly, whereas in the museum proposals, the most frequent targets were: "freedom of movement for visitors", "contact between viewer and exhibit", and "integration between the building and its surroundings". Such specificities reflect, therefore, diverse building types: one which links people to people, another that links people to knowledge (Markus 1987). The morphological analysis was thus conducted accordingly, so that in the study of the residences for the elderly, priority was given to the investigation of spatial properties related to co-presence within the complex, whereas in the study of museums, the insertion of the building within its surroundings was also considered and special emphasis was given to visibility attributes, which tend to play a particularly important role when the interface between people and objects are a main concern. We believed that the designer's ability to deal with "the laws of space to society" in order to achieve his or her intent would emerge more clearly by investigating spatial properties in buildings that conform different types of interface.

Residences for the Elderly

Although interest in investigating and proposing spaces for the elderly has grown in recent years, project guidelines deal mainly with safety hazards and are far from defining how space is expected to contribute for achieving satisfactory results concerning the well-being of residents and day-visitors. Findings resulting from the spatial analysis of two residences for the elderly suggest a considerable distance between project intention and potential spatial performance.

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Besides functioning as a residence the Caico geriatric residence complex was designed to offer healthcare and other services, being divided into five sectors that comprise: administration and service rooms; residential accommodations; assistance, rehabilitation and re-socialisation rooms; chapel; and events hall. Specific objectives for spatial performance, as presented in the brief, are summarized below.

The importance of an animated social life to the well-being of the elderly was emphasized so that the space should favour socialization and co-presence, whereas discouraging isolation; supervised mobility of residents and users were thought to be fuelled by spatial zoning according to specific functions. Residents were to have free outside access, especially to a church located opposite the main entrance, but entrances should be controlled and visiting hours predetermined. The living area should offer privacy to residents likewise the chapel, considered as a site for reflection and seclusion.

The potential accessibility was quantified through "connectivity", "integration" and "depth values". We aimed to determine: (1) if the areas designed for the elderly to socialise are well-connected, well-integrated and highly visible; (2) if the axes with the highest integration potential correspond to the routes mainly used for the daily circulation of residents and how visible they are, especially from spaces occupied by the staff of carers; (3) how accessible and visually exposed the axis leading to the main entrance (monitored by a watchman stationed in a sentry-box) is; (4) how secluded the prayer room is; and (5) how screened from other sectors (and their connection routes) the residential sector is.
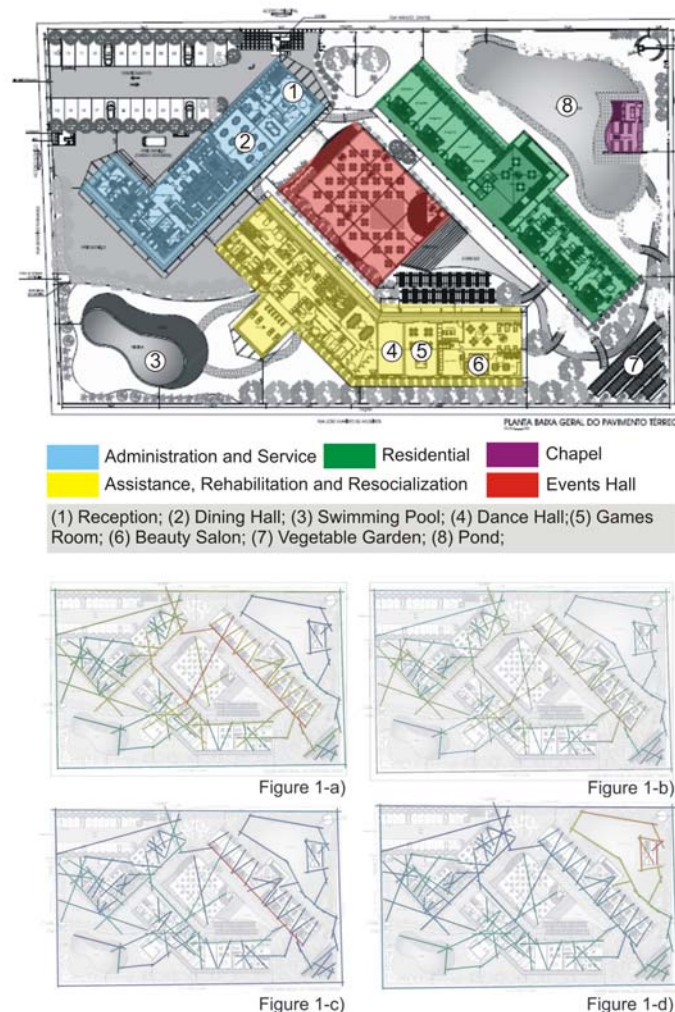
Figure 1

Moradia Geriátrica Caicoense and its Axial Maps. Figure 1-a) Global Integration HH; Figure 1-b) Local Integration HH; Figure 1-c) Connectivity; Figure 1-d) Step depth from access.

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When the complex is axially represented and quantified, the most integrated axis – at both global and local potential accessibility (Rn and R3) (figure 1) is the passage connecting the entrances in the residential block (1.259 and 3.15, respectively); followed by the axis that intersects the events hall (1.176) as concerns global integration, and by the one linking the parking lot to the reception area in local terms (2.65), the average integration values for the system being 0.779 (Rn) and 1.551 (R3).

By comparing the potential accessibility of some key axes with the average global integration of the system, it looks as if they can hardly live up to their expected roles. The games room and dance hall, for example, although having been designed to promote interaction among the aged, do not go beyond the system average (both equal to 0.775) and the swimming pool is even less integrated (0.633). However, project intentions and potential use seem to converge in the re-socialisation rooms, whose integration value is above the system average.
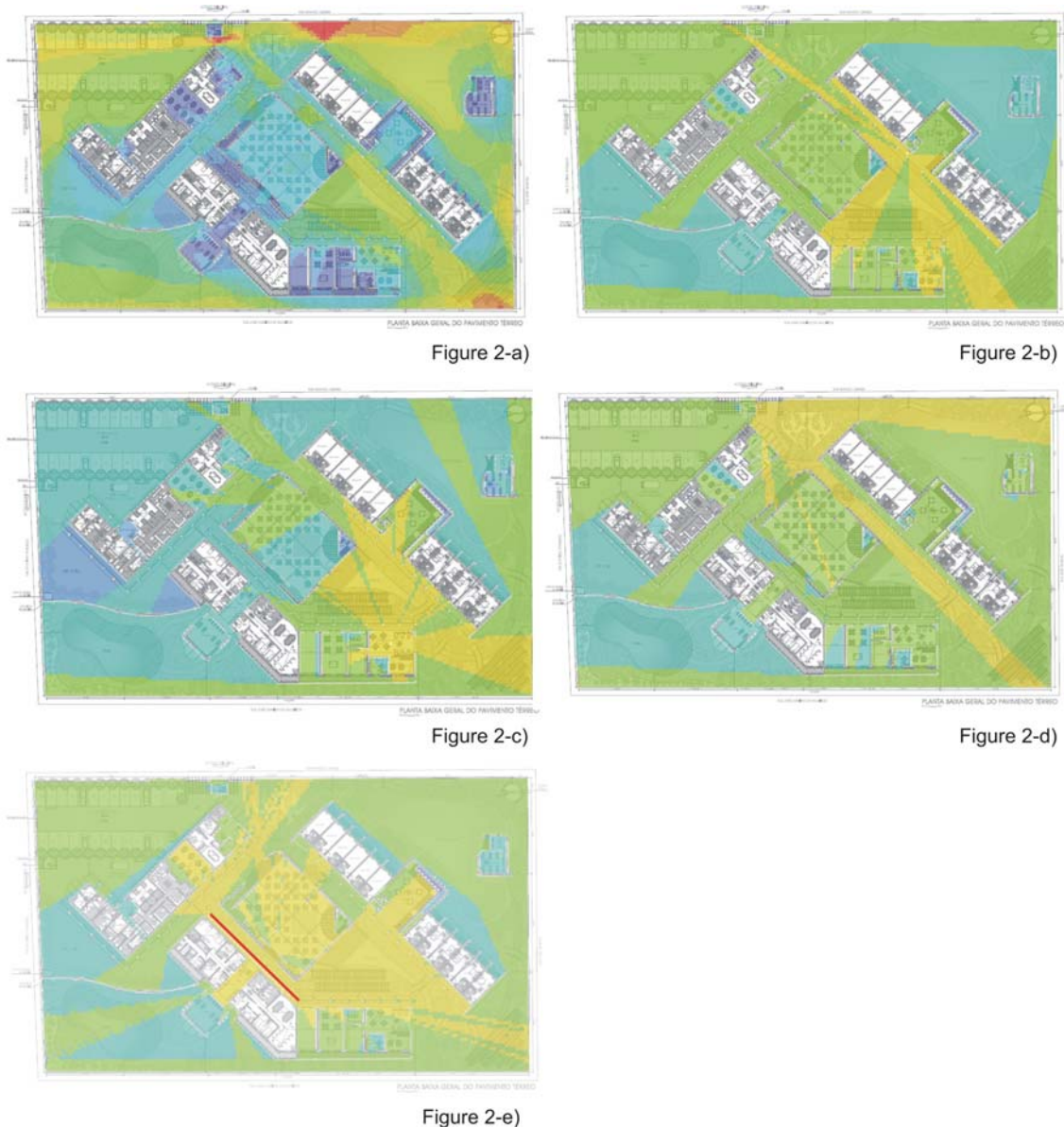
Since the most integrated and well-connected axis (intercepting 19 others, figure 1) is the corridor of the residential block, privacy is likely to be negatively affected, contradicting project expectations. On the other hand, it is too narrow (1.50m) to be used as a place for gathering. The missed-out potential accessibility of this space, its dimension and orientation – facing west, where the strong afternoon sun over the arid Northeastern sertao is unbearable – may have been the most important design mistakes in the proposal. This corridor could well have been planned as a key space for linking people to people, particularly when one considers the region's long ingrained socio-cultural habit of arranging chairs in a circle on the pavement by the front door (mostly facing east) to socialise with neighbours in the afternoons and evenings.

The chapel, however – which the author proposes as a secluded place for reflection located amongst a pond and greenery – is accessed by an axis that presents one of the most segregated values in the complex (0.346). Designed and potential performances also seem to come together in the events hall, located in the central patio opposite the western residential block. With all its doors opened, the hall becomes considerably more integrated (1.176) than the area specifically designed for socialisation. The swimming pool, too, is accessed by axes with low integration values, despite being described as a facility designed to promote social animation.

Because retirement homes require areas with extensive visibility for control and surveillance, visibility graphs were created to show the areas that are more and the ones that are less visually connected. The visual graph analysis (figure 2) shows that the areas of highest visibility are the sentry-box at the entrance, an open area by the pond and a small vegetable-garden. Among the least visually connected areas are the rooms designed for dance and games, the beauty salon, the dining hall and the events hall. Of these, only the sentry-box appears to benefit from a vantage point. Although the designer intended to stimulate interpersonal gatherings in most of these areas, they all turned out to present a level of visual exposure that would hardly suit their requirements. The chapel and, perhaps, to a certain extent, the residential block are likely to benefit from such a pattern.

When the visual field from a point located on the most accessible axis (the corridor by the residential block) is worked out (step depth procedure, shown in figure 2), some re-socialization areas are highlighted. This seems to match the designer's intention to encourage gathering in these areas, despite their low accessibility. By reworking the visual fields from the living room within the re-socialisation block (figure 2), its visual integration with the residential sector is confirmed. However, certain entertainment areas considered to be important for daily contact among residents (dance hall, games room, beauty salon) are not only poorly visually integrated in relation to all others (as seen above) but also in relation to one another (green patches in the chromatic scale from the living room).

Axial step depth procedures were worked out from the main entrance into the building complex (figure 1) in order to ascertain the requirement of a well-monitored access. The residential area, the events hall as well as the service and administration blocks were seen to be shallow from that axis, a tendency that appears to reinforce control respecting the comings and goings to and from the complex. The visibility map of the reception area (figure 2) confirms the previous finding.

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Figure 2-a)

Figure 2-b)

Figure 2-c)

Figure 2-d)

Figure 2-e)

Figure 2

Moradia Geriátrica Caicoense Visual graphic analysis. Figure 2-a) Visual connectivity; Figure 2-b) Visual Step depth from the most integrated point; Figure 2-c) Visual Step depth from the re-socialization rooms; Figure 2-d) Visual Step depth from entrance; Figure 2-e) Visual Step depth from the assistance and rehabilitation block (red line).

In order to test the visual privacy of the residential block, seemingly enhanced by the location of the events hall, visibility step depth was developed from the axis (highlighted in red) that runs between the assistance and rehabilitation block and the events hall. Although part of the residential area is screened by the events hall, most of it is still visible, meaning that the effect of perceived privacy aimed by the designer was only partially achieved (figure 2).

The Elderly Assistance Center located in the neighbourhood of Bras, Sao Paulo, is a proposal for a public owned complex that offers lodgings, medical assistance and community services for the elderly. The basic premise of the project is integration with the urban space.

The project brief states the aim to ease the isolation of the low-income elderly population by offering an assistance centre that looks welcoming and offers facilities for residents and daily or occasional users to interface with one other, the staff, their families and visitors. In this context the central lobby is expected to be the main gathering and activity point; and the ground floor is

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conceived as a communal space, favouring entrances and exits when open.

Similar to the previous analysis, the project objectives detailed above will be examined in the light of its physical and visual potential accessibility as represented by integration, connectivity and depth values. Although a multi-storeyed building[9], the present analyses focus on the ground floor, which encompasses most of the communal equipments and is directly connected to the exterior.

The axial map (Rn) (figure 3), shows that the most integrated axes (both 3.131) are the main horizontal axis and the main vertical axis that cross the complex, with the main horizontal axis being also the most connected way (17 connections).

Figure 3-a)

Figure 3-b)
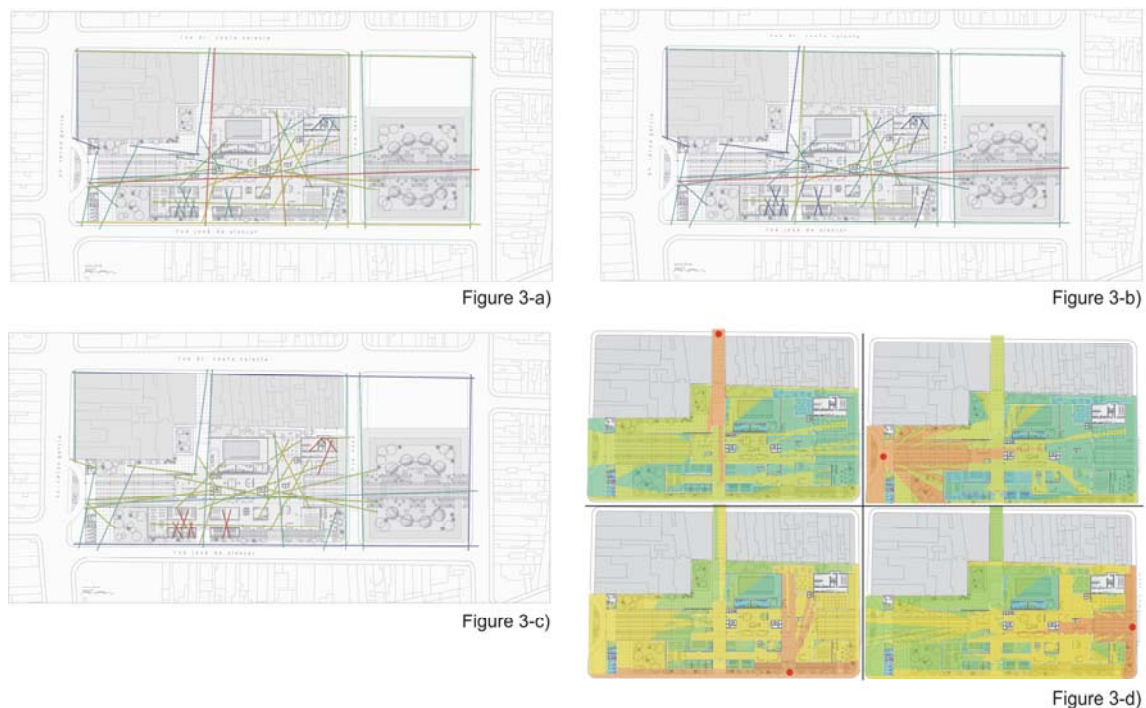
Figure 3-c)

Figure 3-d)

Figure 3
Centro Assistencial's Axial Maps and visual graphic analysis. Figure 3-a) Global integration HH; Figure 3-b) Connectivity; Figure 3-c) Step depth from public space; Figure 3-d) Visual Step depth from different points (points marked in red).

When analysing the step depth from the public spaces, (all streets surrounding the Centre, considered), the main horizontal and vertical axes are among those on the first access level (10 of a total 57). However, a large number of internal axes are on the lower-level chromatic scale.

Considering the importance (stated in the brief) of the links between the complex and the public space, the visibility from the exterior was examined by means of step depth procedures from all entrances (figure 3). The interior can be seen from all of them, at first level of visibility depth: the lane north of the site (point 1); the west entrance (point 2, in which case the visibility cones traverse large areas); opposite the wider translucent opening facing inwards (point 3), where there is a good view of the east wing and the games room (practically the only exterior point from where it becomes visible); and from point 4. The designer's purpose of integrating the structure with the urban area seems, therefore, fulfilled.

Museum Analyses

As buildings that connect people and knowledge, museums may privilege contact among visitors or between them and the art displayed and such contact may occur in many ways. Tzortzi (2007, 72-03) points out two types of museums presenting diverse interface patterns: that in which visitors can freely choose routes through the museum and that in which routes are relatively con-

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ducted. On one hand, pre-defined routes favour the informative dimension or contact between the visitors and the art displayed. On the other hand, freely-chosen routes favour the social dimension or contact between visitors. These dimensions are frequently determined by the "architectural team" and should be imprinted on the system of boundaries and permeabilities that make up the spatial structure of the museum.

Because museums have being seen as an important symbolic asset within the built scenery the analysis of the two museum proposals was developed at the urban and the building scales, although visual analysis was developed only for the buildings.
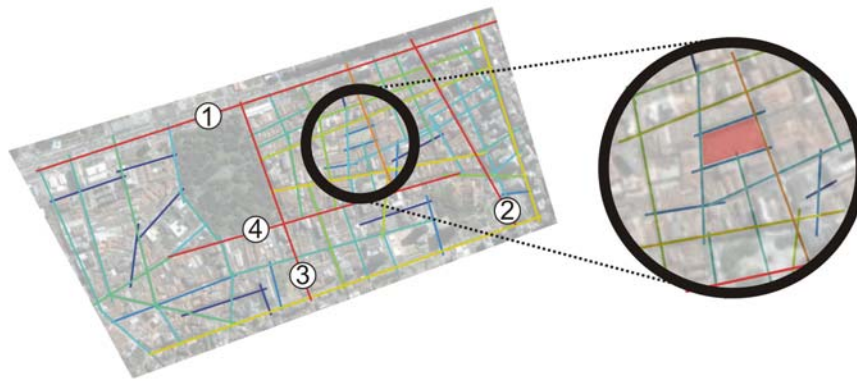
(1) Av. Presidente Vargas; (2) Rua Uruguaiana;
(3) Av. Henrique Valadares; (4) Rua dos Invalidos ou Praça da Republica

Figure 4-a)

■ Administration and service ■ Workshop and exhibition area
■ Restaurant ■ Auditorium ■ Interaction hall

(1) Security and control; (2) Maintenance and restoration; (3) Storage.
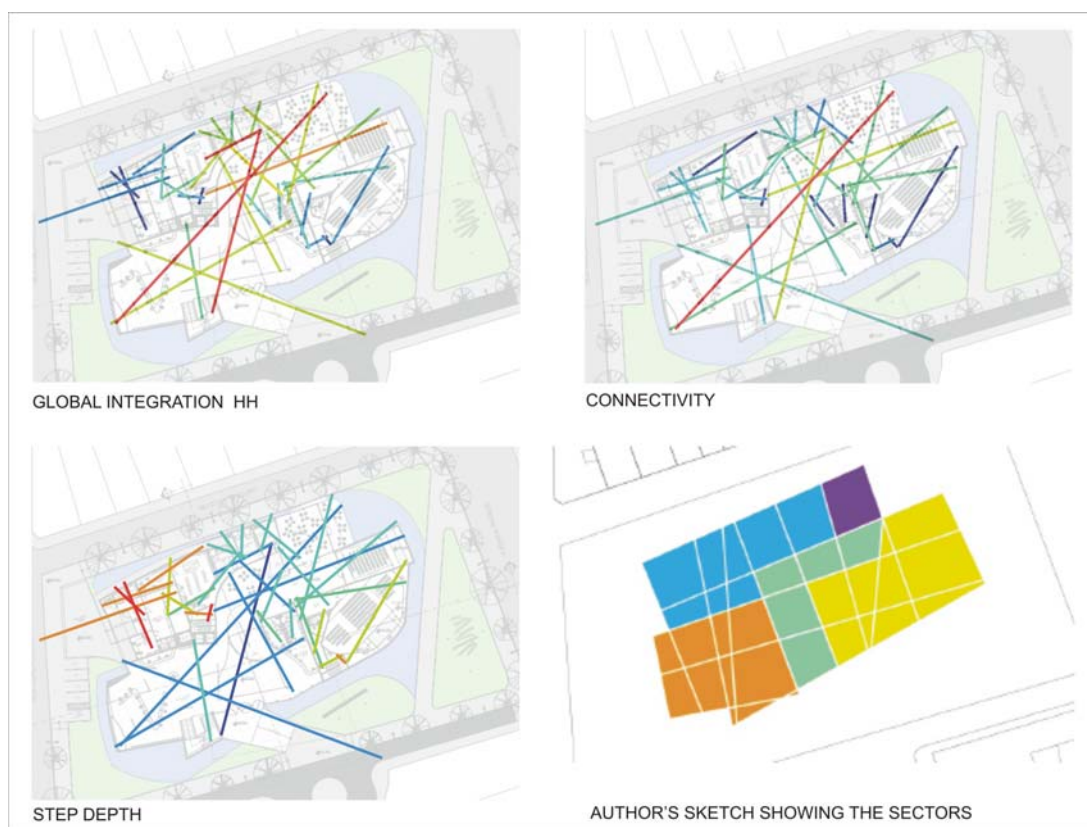
Figure 4-b)

Figure 4
Figure 4-a)Axial Map (Global integration HH) of a part of Rio de Janeiros's centre. In red, the block where the museum would be located. Figure 4-b) Internal arrangement.

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The designer aimed to refute the sequential foundation in the art of the comic strips in his proposal for the Panini Museum of Comic Strip History by allegedly incorporating references of deconstructivist architecture. The sequential elements in the architectural dimension would therefore be the different building sectors (figure 5) which accommodate: hall/ exposition; exposition/workshop; auditorium; service and library.

In the proposal brief it is stated that: the configuration of the surrounding network is reflected in the functional compartmentalizing of the building so that the users can, even subconsciously, relate this spatial fragmentation to sequential art, understood as the basic principle of comic strips; the building should attract visitors who are familiar with comic strips as well as those that may be wandering aimlessly round Rio de Janeiro's "Cultural Corridor" – a part of the old town centre where there is a high concentration of cultural facilities; the building should integrate into the surroundings by being easily "permeable", located close to public transport terminals that services the whole city, and displaying formal attributes of a town square.

According to the designer, this integration is not achieved by means of the material attributes of the built shell (colours, proportions, scales, textures etc), but mainly by the continuity and optimization of the pedestrian flows through the centre. Though occupying an entire block, the museum was designed to function not as barrier, but as a circulation generator.

The axial map of global integration for Rio's town centre (figure 4) shows that none of the main integration axes are tangent to or intersect the museum site, whose accesses present medium and low integration values, (2.086 on average) that tend to be lower than the system average (2.107). This suggests that the network configuration may not favour intense natural movement (Hillier 1996) into the planned structure as expected by the designer. On the other hand, the richness of the cultural programme proposed for the premises and its unconventional architectural quality may arouse people's curiosity, thus becoming a magnet that could benefit the area, a possibility which the designer did not stress.

Figure 5
Panini Museum's Axial Maps and the sectors proposed by the author.

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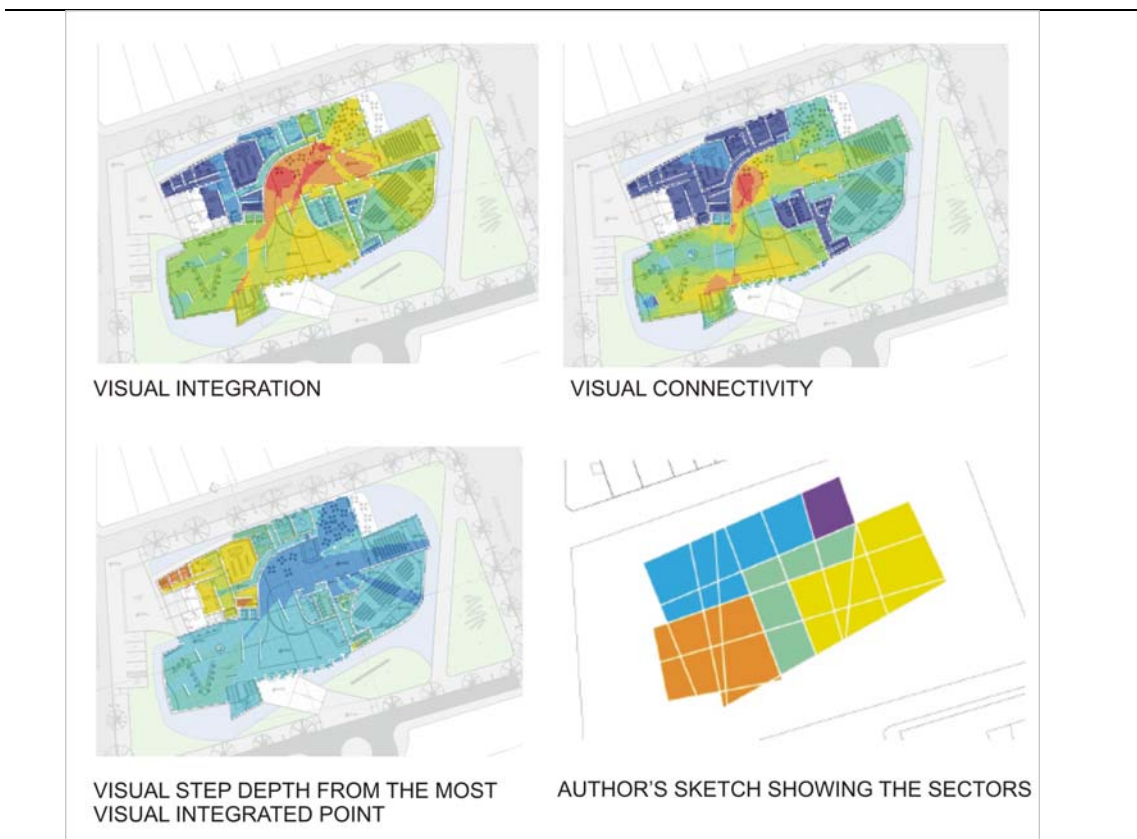
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Figure 5 shows that the museum site, with an average value of 5.2, is less well-connected than its surrounding street system (average 5.545), and the axes that traverse or are tangent to the site are three paces away from the most integrated axis, despite the complex's geometric proximity to the route with the highest integration. Since the museum is located in a very "deep" area, its power as adornment to the city (stated in the brief) is considerably diminished. On the other hand, since the explored spatial properties suggest that, before getting to the museum, visitors would view various other buildings and public areas. In other words, before being exposed to the visual effect that the museum might cause, the visitor would probably experience most of the city centre before. This could turn up as a bonus benefit for the vitality of Rio's old town core that the designer did not seem to acknowledge.

Relations between form and use within the museum were explored by means of axial and visibility representations. The most integrated axis (1.441) at global level, connects the exhibition area designed as a large space for multiple uses, to a controlled access area to the service sectors; the second most integrated axis connects the exhibition area to the restaurant. The spatial solution to the location of these two areas appears compatible with the project specifications. The designer wanted to create a building with characteristics of a town square, even within the interior. The arrangement of these spaces, which are also the extremities of the building's highest integration axis, suggests a good potential for its internal circulation to generate interpersonal encounters. These spatial properties may well foster an atmosphere of dynamic space similar to a public venue.

The less integrated areas are those for maintenance, restoration, storage, security and control, functions that may require separation from the public. Their arrangement in the spatial structure of the building seems therefore to match the desired performance.

The sectoring of the building's uses, functions and activities did not match the project objectives and spatial configuration results (Figure 5). The integration maps are slightly similar to the intended sectoring, however this similarity is limited to the segregation of service areas and conference spaces.
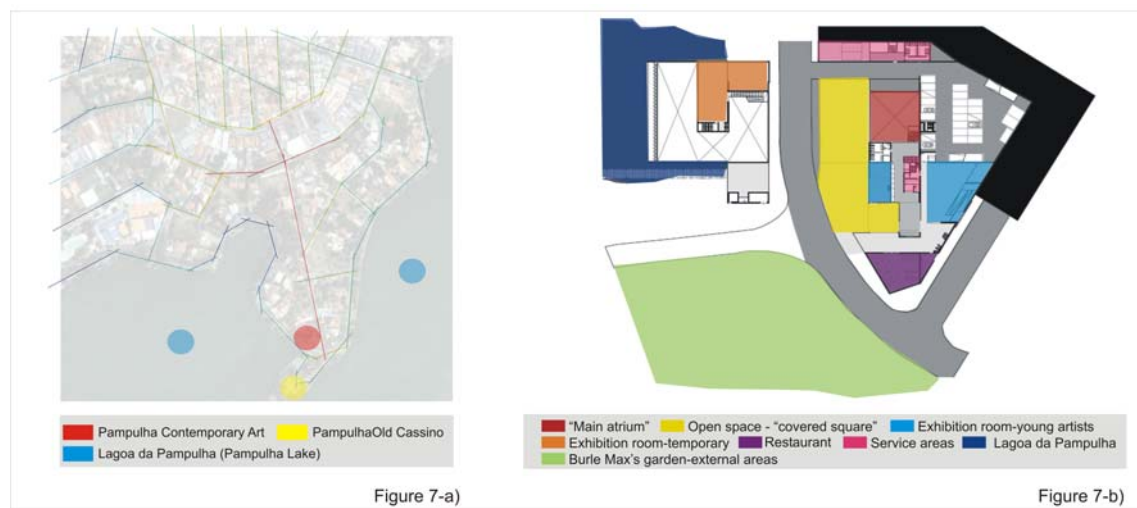

VISUAL INTEGRATION

VISUAL CONNECTIVITY

VISUAL STEP DEPTH FROM THE MOST VISUAL INTEGRATED POINT

AUTHOR'S SKETCH SHOWING THE SECTORS

Figure 6
Panini Museum's Visual Graphic analysis and the sectors proposed by the author

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The sectoring of the building does not match the project objectives in terms of use (Figure 5) but for the segregated position of the service quarters and conference spaces. The visibility graph analysis, however, suggest the building sectoring to be closer to the authors intentions (the designer intended this to be noted by users) as concerns visual connectivity (Figure 6). So, although the sector divisions are not imprinted on the axial maps, they are integrated into the visible boundary systems of the building, becoming potentially recognizable by users. The stepdepth modelling from the most integrated point shows that a considerable area of the building becomes directly visible and nearly all of the museum's internal spaces are on the second level of visibility, a situation that suggests an easy-to-read spatial structure. It also indicates that no specific routes are ascribed to visitors, who can move freely as in a sort of covered interior town square thought of by the designer.

The Pampulha complex is a park surrounding a man-made lake in Belo Horizonte, capital of the state of Minas Gerais. The park and the four buildings that form the original complex – Casino, Ballroom, Yacht Club and St. Francis' Chapel – were designed in the 1940s by Oscar Niemeyer and became internationally known as a masterpiece of modernist architecture.

After gambling was banned in Brazil the Casino was turned into an art gallery, which now requires additional space. The aim of the proposed Pampulha Museum of Contemporary Art is to meet the current demand for exhibition space for contemporary art work since the present museum – a listed building – cannot be extended. The designer intended to take advantage of the landscaped site (by Burle Marx) near the old Casino, and of the view to the lake by splitting the new building into two blocks set at different levels, following the land contour, one lower and closer to the lake and the other, higher, totalling four floors above the access level.

In the designer's view: the building should offer the visitor many route options; spaces should not conflict with the works of art on display; the atrium would function as a central distributor – the heart of the museum space – and relate the building to the exterior, offering an easy-to-read spatial display as well as route flexibility to any part of the museum; the landscape, especially in relation to the lake – and its potential accessibility should be emphasised.

Figure 7
Figure 7-a) Axial Map (Global integration HH) of a part of Pampulha, in Belo Horizonte. Figure 7-b) Internal arrangement.

As most of the discourse focus on the relation of the ground-floor level to the building surroundings, the analysis of the spatial structure was developed for this level.

The axial map of integration of Pampulha's urban network (figure 7) shows that the systems most integrated axis intercepts the museum's main access axis, which presents the second highest

integration value, thus occupying a privileged position in terms of access to the site. The access axes to the old casino, however, show low to medium integration values. This indicates an interesting balance: whereas the old casino does not enjoy very privileged access potential, but is a powerful magnet due to its historical and architecturally significance, the situation is inverted for the new art gallery – a new building as yet devoid of historical significance, but potentially very accessible.

The ground floor axial map of global integration (figure 8) shows the most integrated axis connecting the two museum blocks, which are also linked by the partially underground level that accommodates the museum's technical areas, the temporary exhibit area and the main atrium designed as the "heart" of the building. To access the atrium the visitor must change floors by means of stairs or ramps. The site chosen for the atrium therefore does not correspond to the designer's objectives, since it is not directly connected to the main access and does not link different spaces. In fact, the atrium is a "deep" space; that is, for people to visit it, they must wish to do so. In other words, it is a "to-space" rather than a "through-space", as conceived.

However, the configuration of the building seems to confirm the designer's objective as concerns the viewing of the artworks, since the exhibition rooms are located on the lower and upper levels, and are set apart from the areas of high integration and connectivity with the exterior. Aspects, such as zenithal lighting and the materials chosen to cover the building's interior wall surfaces, are said to have been conceived to entice the visitors' attention towards the art pieces and not the building.

Figure 8-a)   Figure 8-b)   Figure 8-c)

Figure 8-d)   Figure 8-e)   Figure 8-f)
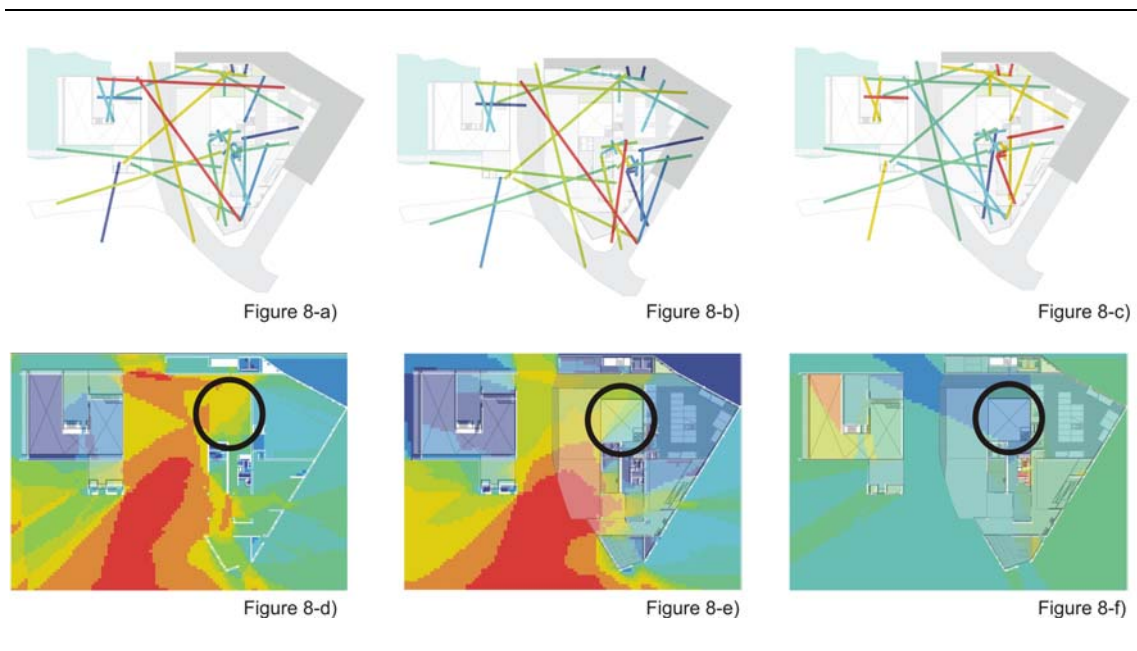
Figure 8
Museu de Arte Contemporânea da Pampulha Axial Maps and Visual Graphic analysis. Figure 8-a) Global integration HH; Figure 8-b) Connectivity; Figure 8-c) Step depth from the axis universally accessible; Figure 8-d) Visual integration; Figure 8-e) Visual connectivity ; Figure 8-f) Visual Step Depth from the elevators. Marked in black: the vacuum where the atrium was projected.

The visibility graph analysis confirms the weak role of the atrium in the structure (figure 8) due to its mediocre visibility potential. The most visible areas are the exterior (Burle Marx gardens), the main entrance and the axis connecting the two blocks. The spatial configuration seems, therefore, in agreement with the designer's objective to value the landscape. The visual connectivity map (figure 8) also shows that the most visually accessible areas are outside the building, the garden and the square are formed by the building's main accesses – much more likely to play the role of a focal point – since the most integrated axes and visible patches converge there, facilitating gatherings and random encounters. The square on the ground floor level could, thus, well become the "heart of the museum".

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The depth modelling of the ground level elevators (an important element of connection for the different floors) (figure 8) shows the construction to be shallow at this point, with most spaces in the first and second levels of visibility. This implies that the museum's visitors on this level will read the building with relative ease.

Towards greater awareness of spatial properties

The account that follows expresses the extent of the importance granted to the effect that spatial properties may exert over the built space, as expressed by designers in the studied sample.

External circulation spaces were largely perceived as a privileged access system. In over 76% of the examined TFGs there was some reference to possible modes of interface concerning these spaces. Indoor communal areas follow suit, with almost 70% of cases, including comments about the ways they should be used and by whom. Indoor circulation and outdoor communal spaces appear in about half the examined proposals (54.8 and 49.6%, respectively).

The importance granted to physical permeability (often referred to as "accessibility" or "integration" in writing) was far greater than that attributed to visibility. In nearly 30% of written accounts there is some sort of reference about all four sets of spaces in terms of permeability for certain users or to/from some other space(s). Only 10.4% of cases do not include any reference to the accessibility of the examined sets of spaces.

Potential visibility, on the other hand was less mentioned. Over 30% of TFGs do not include references to visibility concerning any of the studied spaces. Some reference to the potential visibility (what can be seen by whom) of indoor communal spaces was found in nearly 44% of cases. In 41% of TFGs something was said about the visual field of exterior transition spaces; in nearly 24% of cases visibility was considered for outdoor communal areas and in only 18.5% of cases visibility in interior circulation spaces was considered worth mentioning.

It should be noted that some sort of acknowledgement of the importance played by spatial properties is present in almost all the examined proposals, although whereas some aspects that conform to the project goals are considered, others seem to have been missed out. This indicates that designers work with certain ideas about the potential performance of the building spatial structure whether by sensitivity or spatial experience learned and accumulated. It was, however, seen that the cases where the proposed objectives were spatially met (at least potentially) were few and tended to coincide more with visual properties than with those of accessibility, an inverted tendency respecting the much stronger emphasis given to accessibility in the texts. This reinforces the need to strengthen the morphological field of research in architectural courses, where design training is more strongly directed towards aesthetic-formal and/or technical aspects, whereas social content, or how architecture potentially affects people (Holanda 2002) through the way in which space is structured, is often missed out.

In the analysis of the buildings that relate people to people, coherence between discourse and design was chiefly found out in purposefully secluded spaces, highly controlled accesses, and desired integration between the complex and its surrounding areas. On the other hand, what seem to have been some important misinterpretations of spatial properties were found in the studied cases, notably concerning demands for ease of access, within the various parts that conform the building whole, visual integration and desired privacy. In the case of retirement homes, where interaction among residents is highly valued and should be encouraged such findings emerge as an issue requiring special attention.

The material available in the database that make up our sample did not allow for a full investigation of some spatial properties deemed highly important in the cases of buildings that relate people to knowledge, so that further analysis is required. This seems all the more relevant when one considers that the two cases examined here point out to opposite trends respecting the designer's grip of spatial properties and how they tend to respond to purposeful functions. In the first case, results suggest that whereas the interior space was structured to respond satisfactorily to the

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desired integration or detachment of activities, similarly important properties of urban accessibility appear to have been missed out. The situation is reversed in the other case which was apparently well-located in relation to the designed effects respecting the surrounding spatial structure, but presented poor levels of visibility and accessibility within the building.

Findings, therefore, indicate that the knowledge of potential morphological properties, at least among the studied sample of design proposals by young designers, are more likely derived from his or her empirical experience as a space user than from analytical thought developed along the course. Although such an assertion cannot be, as yet fully sustained, given the reduced number of analysed plans, the study has served to demonstrate that a morphological analysis based on space syntax procedures may contribute towards that goal by helping to ascertain the potentiality of certain project actions, to correct configuration attributes that differ from project proposals and to support design decisions in architectural interventions such as changes and diversification of uses in order to achieve proposed objectives.

Notes

1 M. Veloso et al. (2006) "Arquitetura, projeto e producao de conhecimento no Brasil". Research project, Universidade Federal do Rio Grande do Norte, CNPq.
2 PROJEDATA (2008), a database, ready to be accessed on http://projedata.grupoprojetar.ufrn.br. Created by the research team PROJETAR (Grupo de Pesquisa em Projeto de Arquitetura e Percepcao do Ambiente).
3 Universidade Federal do Rio Grande do Norte (15 cases), Universidade Federal
do Rio de Janeiro (15), Faculdade de Arquitetura da Universidade de Sao Paulo (20), Universidade Presbiteriana Mackenzie (15), Universidade Federal da Bahia (15), Universidade Federal de Pernambuco (15), Universidade de Brasilia (20), Universidade Federal de Minas Gerais (20).
4 A checklist of 15 items concerning the desired spatial performance of accessibility and visibility in 4 key spaces – exterior circulation, interior circulation, exterior communal areas, interior communal areas a– was applied to each project and the number and content of mentions (or their absence) recorded.
5 The town of Caico is a regional centre in Serido, state of Rio Grande do Norte, a part of the hot dry area known as the Brazilian sertao. TFG by Erika Brito, Universidade Federal do Rio Grande do Norte, 2006.
6 By Fernanda Castilho, Universidade Presbiteriana Mackenzie, Sao Paulo, 2005
7 By Rafael V. Medeiros, Universidade Federal do Rio de Janeiro, 2006
8 The Pampulha park is an icon of modernist design conceived by Niemeyer in the capital city of Belo Horizonte, state of Minas Gerais.
   By Alvaro L. Perez, Universidade Federal de Minas Gerais, 2006
9 The Central Assistance Project is built on 8 floors.

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