

## THE SPACE OF ARCHITECTURE AND A NEW CONSERVATION AGENDA<sup>♦</sup>

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### Abstract

The paper discusses conservation theories and practices, taken as its central argument the disjunction between architectural and conservation theories with regards to the concept of space. It argues that space is a central concept of modern architecture and should be observed as an object of interest for conservation and restoration. Morphological properties of space and methodological procedures for its representation, description and analysis are presented and recommended to be included to the architectural conservation consolidated practices.

**Key words:** *space, conservation, heritage, modern architecture*

### 1. Introduction

The modernist building stock is becoming an object of interest of conservation and restoration worldwide, reaching the status of national and international heritage. Indeed, countries from all continents are investing on listing and restoring their modern heritage, facing new technical and theoretical challenges, such as the adaptation of these historical buildings to new functions that alters, most of the time, their spatial composition. In fact, the requirements of contemporary lifestyle may not converge with the characteristics of historic buildings and buildings from a recent past, demanding, sometimes, radical interventions on architecture's material support. On the one hand, new infrastructure may be installed; roofs and external finishings may be replaced; as well as extensions and additions may be built. On the other hand, the network of spaces in which we inhabit and move is commonly changed, either by removing/introducing partitions or by altering the existing connections between spaces to attend to new socio-functional and pragmatical requirements.

In addition to this particular aspect of adapting older buildings to new requirements, identifying, describing and listing relevant modern buildings demand adequate theoretical and methodological procedures, as the object of interest is relatively new and is funded on theories other than the classical theories that have funded conservation

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principles and procedures, so far. In fact, this architecture of a recent past is still relatively unknown and does not have the social recognition and status that it deserves, as Diane Wray (1995) comments on the layman and conservator's attitudes towards buildings from a recent past: 'it's too new, it's second rate, it's ugly, it's not historic'. Furthermore, conservation instruments summarised in the international conservation charters seem to be inadequate to fully describe some of the key-elements that characterise the modernist experience, both at the level of their extrinsic and intrinsic values. The first being the historical and cultural values attached to them, whereas the second examines the technical and compositional values, which are embedded within their physical matter.

Scholars refer to these paradoxes faced by theoreticians and conservators dedicated to the restoration of recent buildings. Jandl, for example, affirms that whereas building's exterior may be its prominent aspect, its interior may be more important as reveals its history and development through time (Jandl, 1992: 217), and recommends that any preservation action should include the protection and conservation of the interior space and its configuration, including the circulation system and architectural finishings. Albeit recognizing the relevance of the interior space, the author emphasizes the physical properties of architectural continent, such as finishing and built-in furniture, and not the contained, or structured, spatial network.

Less attention is given, therefore, to architectural spatial structure, the architectural dimension that mediates its social and material structure. This spatial dimension of architecture is of key importance as it both supports the materialization of social attributes and creates the field of possible social interactions. It is, therefore, fundamental for the conservation of the principles that shaped the architectural form, the understanding of its spatiality and the establishment of technical procedures to support its conservation and restoration. Considering space as the architectural dimension that distinguishes it from other artistic expressions, we should consider it as an object of conservation itself and not only a subsidiary product of the efforts of consolidation, restoration and conservation of their physical boundaries.

## **2. The problem of space and its conservation**

The problem in light emerged, therefore, from the exam of the international conservation charters and founding documents of the restoration theory, which discourse does not contemplates a concept of space, as defined within the context of modernity. It is, perhaps, in the ambiguity of the use of the word *space* that resides the reason of the absence of the spatial dimension within the context of the restoration theories, funded on the classical theories. According to Collins (1998), the classical theoretician considered architecture as an art of building, i.e., architecture was the building itself, understood as proportion and structure. This understanding of building did not necessarily implied the meaning of space continent, even though a complex sequence of interrelated patios and rooms was one of the particular properties of classical architecture (Collins, 1965: 285). This distinctive trace, however, was not an object of theoretical interest.

If this is correct, a paradox can be established: while the concept of heritage evolved through the 20<sup>th</sup> Century to incorporate artistic and cultural manifestations of different natures, the restoration theories associated to the architectural object did not observed certain cultural values impregnated within the formal and spatial architectural dimensions. This disjunction between restoration and architectural theories has its origins in the distinct paradigms that serve as their foundation: if on the one hand, the modern architectural theories take space as the protagonist of architecture (Zevi, 1951; Gideon, 1978, Forty, 2000), on the other hand, the restoration theories (Viollet-le-Duc, 1987; Brandi,

2004; Boito, 2003) take the tectonic dimension as its protagonist, as the classical theories argue.

The word space is introduced to the architectural discourse only in the middle of the XVIII century, but without denoting three-dimensionality. This will only occur in the following century, with the use of the German word *raum*. According to Collins (1998), the word space as used within the context of modern architecture has its origins in the writings of the art historian Henrich Wölfflin and it is spread out through his English speaker disciples.

Adrian Forty (2000) offers a substantial review of the evolution of the concept of the space within the context of architectural discourse. According to the author, the word space did not exist in the vocabulary of architecture until 1890 and its introduction is related to the development of modernism, keeping from its origin certain ambiguity in its meaning: as a physical dimension or a mind set, in other words, as an apparatus we use to understand the world. In this sense:

(...) it is simultaneously a thing within the world, that architects can manipulate, and a mental construct through which the mind knows the world, and thus, entirely outside the realm of architectural practice (although it may affect the way in which the results are perceived). (Forty, 2000: 256)

Recognizes that the term comes from the German *raum*, which original sense incorporates both meanings described above, as part of a philosophical discourse, but also recognizes that we cannot affirm that the term is assumed within the architectural field exclusively funded in that philosophical tradition.

The use of the term space becomes consolidated within two lines of thought. The first one emerged from the efforts of the German architect and theoretician Gottfried Semper to build a philosophy based theory of architecture, describing the genesis of architecture without referring to the construction of orders, according to the classical tradition, but arguing that the first architectural impulse was to enclose space and that the material components of architecture are secondary to this enclosure (Forty, 257). Semper understood space as the protagonist in design and building activities. Semper's ideas are evident in the first generation of modernist architects, such as Loos and Berlage.

The second tradition has its origins in Kant's 'Critic of pure reason', from 1781, in where he argued that space is not an empirical concept, derived from an exterior self experience, but that space exists priorly in our minds as pure intuition, where all objects should be determined. Therefore, it is only from the human point of view that we could talk about space (Forty, 257).

In the first decades of the 20<sup>th</sup> century these two lines of thought established ties with the theory of architecture and with the development of new practices and design proposals. One of the most significant contributions to the evolution of the notion of space is found in 'Manifest', an article by Rudolf Schindler, in 1913: 'The modern architect conceives the room [*Raum*] and forms it with wall – and ceiling – slabs. The only idea is space [*Raum*] and its organization. Lacking material-mass, the negative interior space [*Raum*] appears positively on the exterior of the house' (Forty, 2000: 262).

It is only in the 1920s when the lines of thought mostly influential to modernism are consolidated (Forty, 2000: 266): a) the one that understands space as enclosure, following Semper's tradition, that has in Loos' *raumplan* its most significant exemplar; b) the one that understands space as a continuum, in other words, that interior e exterior are one and infinite. This concept is central to Neoplasticism and Bauhaus School, with large reverberation in Post-war North American's architecture; c) the one that understands

space as an imaginary extension of the body, defined by the biological sensitive of the human body.



IMAGE 1 - Kallis House, Los Angeles, by Schindler (Photograph: Luiz Amorim).

The discussion of architectural space is, therefore, deeply related to modernism – its ideas and realization. In this sense, to discuss the notion of space as a heritage value, is to discuss the 20<sup>th</sup> century architecture and the questions it poses to the theory of restoration, which is still to build new grounds to approach the complexity of modern architecture conservation (Jandl, 1995).

A close look at the international conservation charters would reveal if space is seen as an object of conservation. Of all charters, space is referred to in only a few operative documents, either by considering the limits of adaptation for new uses – Italy Restoration Charter, 1972), recommending to avoid significant changes to the interior space sequence, or the need to keep the historical character of city through the interior and exterior aspects of buildings, in particular its space organization – Charter for the conservation of historic towns and urban areas, Washington Charter, 1987 ([www.international.iccomos.org/charters/towns\\_e.htm](http://www.international.iccomos.org/charters/towns_e.htm)).

Therefore, the charters do not incorporate Hillier's laws of the architectural object (Hillier, 1989) that propose that human societies order their spatial milieu to construct a spatial culture, understood as distinct manners of ordering space to produce and reproduce the principles of ordering social relations. Space is, therefore, used to generate, as well as, to restrict social encounters, according to the involved forms of social reproduction. In both circumstances, space is seen as an integral part of the social morphology, and not only a function of the principles of social reproduction (Hillier, 1989). As space configuration is a constituent part of a spatial culture, it should be seen as part of our cultural heritage.

### 3. Describing space

The representation of architectural material self is consolidated within the professional field for centuries, but the objective description of architectural space is relatively new and not yet fully integrated to the professional knowledge. Researchers focused on the field of architectural morphology (Steadman, 1983) have been dedicated to the description of architecture, including the representation of space. Hillier and his colleagues from the University College London proposed a theory and a consistent set of techniques, known as space syntax, that understands the relationship between social and spatial attributes as an intrinsic part of the architectural object (Hillier and Hanson, 1984, Hillier, 1996, Hanson, 1998).

The description of space, as proposed by Hillier and Hanson (1984), is based on how we use and perceive the built environment (see Image 2). According to Hanson, 'the syntax of space can be considered in its 'axial' or one-dimensional organisation, its 'convex' or two-dimensional organisation, and in terms of its 'isovists' or visual fields' (Hanson, 1998: 39). We develop our daily activities in convex spaces and we move about and understand the environment we are immersed in by means of axial lines and visual fields. Convex spaces represent the local properties of buildings, whereas axial lines represent their global properties: the degree of cohesion and continuity of buildings.

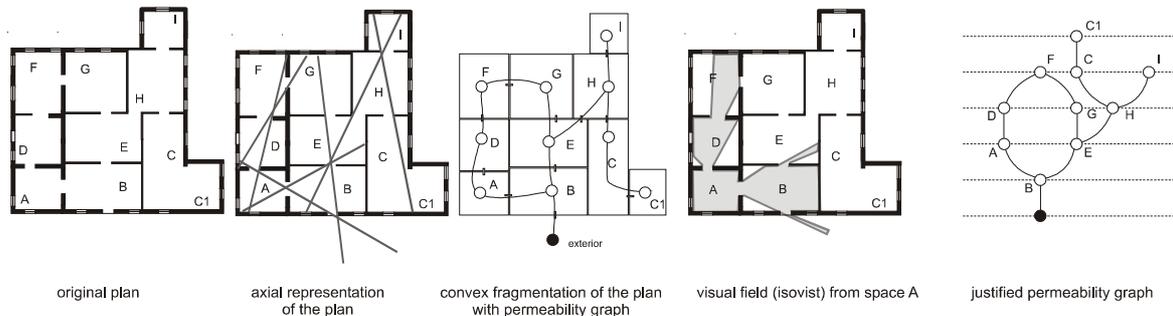


IMAGE 2 - Space dimensions and plan representation: axial, convex, visual field and justified graph

The concept is based on three fundamental rules: (a) those that emerge from the spatial configuration, establishing a field of possible spatial arrangements; (b) those that also emerge from the spatial configuration and establish a field of probability for the emergency of social practices, and (c) those that emerge from social relations, i.e., are part of the social practices that define the diversity of human societies. In this sense, it is understood that the spatial configuration is at the same time an expression of the possible spatial arrangements, selected to attend the socio-functional requirements of an specific social group, in a certain historic period, and that this configuration carries within itself the rules that restrict the possible interactions between the members of the social group. In this sense, space mediates co-presence and co-awareness.

The network of spatial locations can be better described if it is represented as a relational system, where the components are analysed according to the relative positions they assume amongst them. The topological description is based on graph theory. Image 2 shows the convex map – understood as the minimal set of the larger convex spaces, its graph representation, where each convex space is represented as a vertex (a node) and the permeability between them is represented as an edge (a link). The graph is ordered, or justified, from the exterior and sequenced, step by step, according to the connectivity between spaces. This representational technique reveals how access and movement are built. Each space could be seen according to the categories of users and activities developed within it. This classification helps us to understand how activities and people are distributed in the building in such way to make people and activities acquire a particular dimension (Amorim, 1997; 1999). In this sense, the spatial structure reveals not only the compositional rules that ordered it, but also the social rules that order how space is occupied and inhabitants and visitors interact.

#### 4. Modern space

Modern architecture brought into evidence the need to break up with a long architectural tradition that forms most of Western heritage. This rupture is evident not only at the material form of architecture, but mostly at its spatial level, which distinctively interferes in the reification of social requirements, therefore the rupture carried out by modernism

had a profound effect not only at the appearance of things, but also, how buildings are used and people interact.

In fact, the concept of space is, perhaps, the most striking contribution of modern architects to architecture; the one that has mostly affected our daily lives. Modern space may be described by its generic properties. The most evident and commonly referred to are (a) the open plan, (b) the flow of space – that visually integrates interior and exterior spaces, and (c) the categorical differentiation of classes of space into functional zones. The first ones are related to the expansion of visual fields and consequent spatial continuity. The latter establishes in what circumstances people may move within space and interact.

The reification of this modern space is a function of the structural system, as in the open plan; the flexibility of its boundaries – such as mobile panels and furniture – expanding or retreating the fields of vision and changing the movement network; and function of the fragmentation of the spatial arrangement and the considerable depth of the accessibility networks. In this case, it is the space itself, as a component matter of architecture, which is the focus of specific composing rules.

Functionalism was, though, the particular theoretical concept underlying significant modern manifestations. Functionalist doctrine in architecture can be summarised by the primacy of the lay-out, as a consequence of space use in design methodology; this lay-out is expressed by the formal aspects of a building, by the use of contemporary structural and building techniques, material integrity and auto-referential procedure, which avoid any historical reference.

Functionalism is directly related to the interest demonstrated by modern architects in buildings and structures designed by engineers, since the middle of nineteenth century. What impressed them most were methods, which have permitted the creation of those revolutionary structures. The basis of engineers' designing procedure was the science of nature, expressed by the way materials behaved under the stresses to which they were subjected. In this sense, "the engineers had the secure authority of science behind their work and it was this scientific basis which gave their designs their originality and power" (Steadman, 1979: 206).

The functionalist design method is based on objective and scientific procedures. The definition of the programme is the fundamental operation of the design. It consists of listing every activity and its requirements - including basic spatial and volumetric dimensions, biological parameter of comfort of occupants, nature of the building material, technical suppliers and structural necessities. The collected data, represented in a series of relational diagrams, become the main source of input to project decisions. It was believed that this auto-referential structure of scientific and systematic analysis of the programme could generate a new spatial and formal order, free from the traditional concepts of architectural style. This not only meant a precise scientific consequence, but also imposed a moral statement in architectural conception, because the meaning of the building itself should be accessible and transparent - a universal formal language, the true expression of the functional requirements (Colquhoun, 1985; Hays, 1992).

The analytical design process, called elsewhere the sector's paradigm (Amorim, 1997, 1999), was composed of three stages: classifying, grouping and connecting. Classifying consists of listing activities and classifying them according to particular set of requirements. Grouping forms sets of spaces or activities related to each other, generating sectors. Connecting sets out the necessary rules that makes the system works.

In fact, the most pervasive spatial attribute of modern buildings is the use of space both to connect and separate people and things. Openness and flow of space create visual

integration and lack of control. For a visitor, the sense of belonging is immediate: if I can see, therefore I can move about without any constraints. Nevertheless, control is a natural demand of individuals and social groups. Individuals praise their privacy; social groups establish codes of behaviour and programmed interactions. Modern architects seem to have solved this paradox by arranging these local and global dimensions in a singular manner: transparency is combined with deep, segregated and highly classified systems that isolate categories of people. In this model, everything is at the touch of an eye, but far away. In sum, modern space could be characterised as being composed of a complex convex break up, formed by a large number of small units, axially articulated to generate complex and difficult to grasp spatial complexes, unless one goes through a profound peripatetic experience.

If now we compare the characteristics of buildings within a certain historical period and social group, we may find consistent spatial patterns, which are expressions of the cultural milieu. Studies on vernacular architecture around the world reveals how consistent these patterns are and how social and spatial dimensions are related to each other. For example, Hanson's (1998) study about the spatial organisation of the English house shows the consistent elaboration of house's plan in order to preserve the relative segregation of the parlour – the formal reception room, therefore isolating the visitor from the domestic family universe. Note that space and use are part of an integral object – the house, and the association of certain spatial properties (segregation and closeness from the outside world) to certain type of use is a clever strategy to adequate social demands to spatial properties. These are called genotypes of ends, i.e., consistent socio-functional patterns found within a sample, that represent how space is structured and used to attend to determined end. Vernacular architecture is, in general, structured as genotypes of ends.

Nevertheless, we may find consistent spatial patterns, which are not necessarily based on socio-functional requirements. Scholars have already described how architects construct a solid and consistent set of compositional rules. The consistency, by which certain spatial properties are revealed, regardless of any functional domain, is called genotypes of means (Hillier, 1996, Amorim, 1999).

Buildings designed by architects are less dependent on these cultural genotypes, as the conscious act of design permits the emergence of new architectural solutions and to challenge cultural practices. This is the case of Le Corbusier, as suggested by Irwin (1988). He argues that Corbusier's houses do not present a consistent space-function differentiation, as found within vernacular sets, and suggests that this is a matter of profound sense of architectural experimentation and innovation. However, Irwin identified a consistent pattern of space organization, regardless any reproduction of a cultural genotype – a genotype of ends, which could be characterized by: (a) low levels of intelligibility, i.e., the visual fields are not coherent with the accessibility pattern; (b) by a disjunction between the topological structure of the plan and its geometrical order; and (c) that the visual fields are dramatically distinct along the lines of movement, generating unexpected experiences.

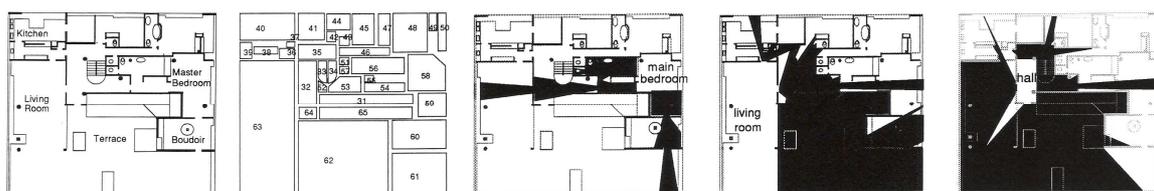


IMAGE 3 - Villa Savoye, Le Corbusier: *piano nobile* and its spatial representation (convex break up and convex isovist (after Amorim et al, 1994).

In sum, modern buildings can be characterised by a consistent application of certain spatial themes – transparency, convex and axial complex articulation, but they are also permeated by social attributes (Amorim, 1999). The identification of consistent spatial and socio-functional patterns helps to determine how representative a singular or a group of buildings are, and what kind of properties should be left intact, or restored, to preserve the essence of the modernist form.

## 5. Conclusion: towards a new conservation agenda

It is argued that the spatial dimension of modern architecture should be considered as an object of conservation. We have centred the argument on the concept that it is the space itself that creates the network of potential co-presence and co-awareness that makes social interaction possible. Therefore, different societies establish the adequate arrangements to fulfil their aims. Architects do explore these spatial properties, sometimes subverting the prevalent social logic, to provoke a rupture within it, to attend to personal requirements, or mostly, to explore space as a component of a complex composition of surfaces and emptiness. In this sense, space is also an expression of ethics and aesthetics values. Some architects do construct a personal spatial signature. While revealing social attributes, psychological profiles, or personal compositional strategies, the space of architecture is an integral part of an integral social construction, and therefore, should be preserved as a social artefact.

It is recommended that the analysis of the spatial structure of historical buildings should be introduced to the *modus operandi* of any conservation or restoration project, taking into account the following procedures:

- a. Preparation of the base records (plans, elevations and cross-sections) to permit the representation, analysis and interpretation of building's spatial structure;
- b. Representation of the convex, axial and visibility properties;
- c. Description of their configurational properties;
- d. Identification of the functional and spatial inequalities;
- e. Identification of space genotypes, both of means and ends, when studying a large sample;
- f. Identification of the relevant spatial properties to be preserved (accessibility patterns, visual fields, etc.);
- g. Generation of a set of prescriptive rules of thumb to be attended by the conservation or restoration project;
- h. Inclusion of a synthetic spatial data on the base record of the building;
- i. Evaluation of the restoration project to confirm if the selected spatial properties of the building were not altered.

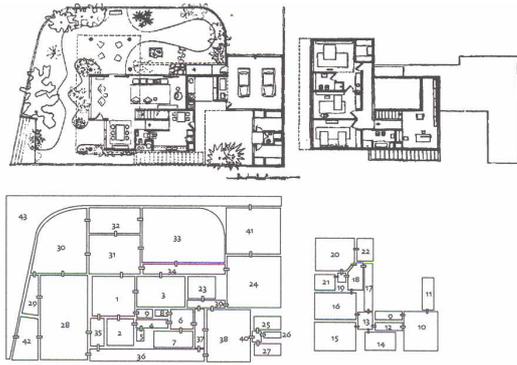


IMAGE 4.a - Plan and convex map

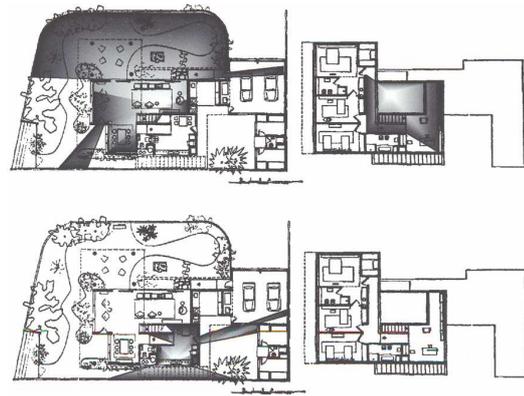


IMAGE 4.b - Visual fields

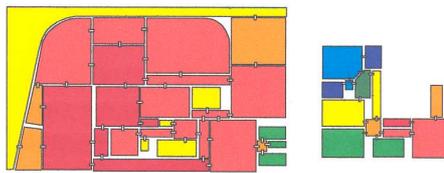


IMAGE 4.c - Plan and convex map

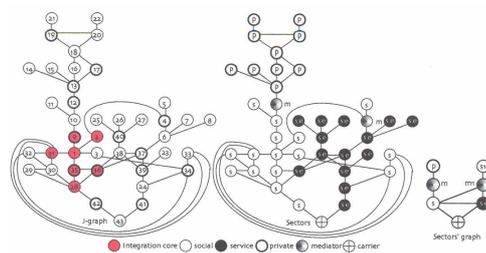


IMAGE 4.d - Justified graphs

IMAGE 4 - Borsoi House, by Acácio Gil Borsoi: plans and spatial representation (convex break up, justified graph, convex isovist and integration values (after Amorim , 1999).

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