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Sociological Architecture
A Particular Way Of Looking At Places

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Abstract   337

Architecture is frequently considered to be a craft, an art or a technique. This article also holds it to be a science, which allows us to look at places from a specific point of view, one not akin to those of other disciplines. In examining modalities of knowledge, I suggest there has been a change of paradigm in the field in recent decades, one that recovers reflexive-theoretical knowledge. Asserting architecture to be a scientific discipline means not denying, but rather strengthening interdisciplinarity in dealing with questions related to places produced or appropriated by people. In what follows, therefore, I emphasise contributions by authors from other disciplinary fields, who look at places from a morphological point of view. I explore architecture as an independent variable: once ready, it affects people in various ways, the sociological way included. The latter may be encapsulated in the following questions: does formal-spatial configuration (voids, solids, their relations) imply desirable ways for individuals and groups (social classes, genders, generations) to locate themselves in places or to move through them, and consequently desirable conditions for personal encounters and avoidances and for the visibility of one another? Does the type, quantity and relative location of activities imply desirable patterns for the utilization of places, in space and time?[1]

Keywords: discipline of architecture, architectural *savoir faire*, reflexive-analytic architecture, architecture as a human science, sociological architecture

1. Introduction

The source of this text dates back to a debate that took place in the ANPUR[2] National Conference, in May 2005. During a panel session on "Territorialities and urban and regional spaces: 'new' theoretical approaches" the theme *architecture as a discipline* came to the fore once again.[3] Underlying it were the following questions. Can architecture lay claim to a place in the pantheon of scientific disciplines? How should its relations with, or insertion among, human sciences, sciences of nature, techniques, arts, be characterized? Does the interdisciplinarity that is so patently necessary when dealing with urban space dispense with a need to develop a specific reflective field - that of the *architecture of the city* - that is characterized by theories, methods and techniques that are specific to it? How broad should such a field be, in order to reflect the multiple dimensions of architectural reality? Is it possible to detect in the literature published in Brazil and elsewhere, clues indicating that the forging of a new *science* is under way?

Nobody at that session spoke in favour of the status of *architecture as a science*. Monte-Mór prefered to invest in the construction of a "multi-inter-trans-disciplinary field"[4] in order to come to terms with "the city" - no distinct or specific point of view being required for that purpose. Villaça, meanwhile, denied architecture the status of science, which he suggested would be properly fall to geography in dealing with urban space. I argued that both epistemological standpoints imply jeopardizing the advancement of knowledge in important realms of reality. Knowing the places of our daily life better involves developing theories, methods and techniques that belong neither to geography nor to any other human or natural science, let alone to "interdisciplinarity". In order to substantiate this viewpoint, I shall now proceed to deal with the following issues: the definition of the scope of the narrative that will be presented here; problems of reality and representation in architecture; aspects that are peculiar to the way architecture looks at places; the constitution of a discipline of architecture and its subdivisions; architecture as a human science and what I mean by 'Sociological Architecture'. Finally, the account will be supported by examples of empirical analyses that illustrate the argument

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2. Two bifurcations; two choices

I identify two initial bifurcations and two choices in the theorization of architecture, with a view to developing this essay. Firstly, architecture can be regarded as both a *dependent* and an *independent variable*. As a *dependent variable*, it is *determined* by the socio-natural environment in which it comes about. This encompasses, for example, on the one hand, climate, topography, geology, hydrographic systems, availability of natural materials (natural environment) and on the other, scientific-technological knowledge and economic- political-ideological interests (social environment). In this respect, architecture *derives* from the socio-natural environment[5]. Conversely, as an *independent variable*, architecture has *effects*. As an artefact, it has an impact on our lives and the natural environment: it *determines* whether: i) activities are provided with adequate support for development; ii) hygrothermal conditions are comfortable; iii) energy maintenance costs are correctly accounted for; iv) there is sensation of beauty, etc. In other words, architecture *leads to this*[6]. To the extent that the first bifurcation is between architecture as a dependent variable and architecture as independent variable, I have chosen to examine it as an *independent variable*. As to the second bifurcation, to the extent that architecture can be regarded as an independent variable that impacts on the natural environment and people, I have chosen to examine its impact on people.

3. Architecture: reality and concept

As in any realm of reality, empirically speaking 'architecture' is not a given; it does not exist *in itself*, independently of our representations. I am not advocating obscurantist post-modern subjectivism here. I do not deny reality *in itself*, but I do accept that any analysis of such a sweeping generalisation as 'reality' posits concepts, reflections, representations. There is no such a 'fact' as architecture; it consists in what is circumscribed by a definition, by a point of view that selects, includes, excludes, qualifies. It is therefore 'theory-dependent'. Here, I have adopted a concept of architecture that avoids the reductions that are frequently encountered in the literature[7]. For example, the formulations of Lucio Costa[8], Bill Hillier[9] or Evaldo Coutinho[10] imply the inclusion of certain manifestations in the

'architectural family', while excluding others. My definition broadens the scope of architecture in four directions: i) all buildings are architecture, not only those that reveal a certain "intention" (so contradicting Lucio Costa); ii) space produced by means of implicit, unconscious, popular knowledge is as legitimately architecture as that produced by explicit, reflective knowledge (so contradicting Bill Hillier); iii) external spaces of streets and squares, not just the internal spaces of buildings, are architecture (so contradicting Evaldo Coutinho); iv) finally, the natural landscape, even when untouched by man, presents a formal, spatial configuration which is open to scrutiny and evaluation *as architecture*, as much as the form-space of buildings and cities as artifacts (thus contradicting the vast literature in which 'architecture' is confined to places built by people).

The concept of 'form-space configuration' is inspired in Evaldo Coutinho. It suggests that architecture comprises 'means-components' (sculptural elements, solids, *form*) and 'end-components' (voids, emptinesses, *spaces*). Curiously, theory and history in architecture has paid more attention to means-components than to ends-components: volume, the composition of façades, textures, colours, materials. However, these can be regarded as belonging more specifically to the language of sculpture. The elements *par excellence* of an architectural language are the end-components, spaces. These may be the rooms in a building or the streets, avenues, squares, parks and open spaces in cities as well as in the natural landscape. After all, it is in them that we immerse ourselves! Spaces are characterized by relative location concerning other spaces (implying certain topologies), permeabilities or barriers, transparency or opaqueness, values of light and shade, sounds, air temperature and movement, even smells. 'Means' or 'ends', we cannot ignore the fact that we are affected by both the former and the latter when we appropriate places. Thus, despite their being analytically separable, there is a need to theorize on 'form-space configuration' in a way that does justice to the conjoint ordering of the two components.

By this reasoning, natural landscapes or any artifactual places are architecture. But are they simply that? Mountains or buildings are *facts*, but beyond this paltry realisation, they can 'be' many things, depending on how we illuminate them with our *reflexive gaze*. For example, for economists, a building is a 'fixed asset'; for geologists, a mountain is the crystallization of the movements of many layers of the Earth's crust. As characterized by economists and geologists, neither buildings nor mountains are architecture. It is therefore the task of theory to show *how* they should be understood *as architecture.*

The challenge, then, is to identify the *aspects* that characterise architecture. In this respect, 'aspects' may be understood as a theoretical device upon which a definition of architecture can be founded. The term encompasses the implications of places as architecture, how it affects us in various ways, its multidimensional *performance*. Of course, 'places' also have other implications for people, as in the previous examples of 'building' and 'mountain'. The taxonomy proposed here, though, is one whose investigation constitutes a body of specific knowledge - that of the *discipline of architecture.*

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The taxonomy that follows is explained by means of questions relating to each of the aspects involved, including:

o   *Functional aspects*: Does the place satisfy the practical exigencies of daily life in terms of the type and the quantity of spaces required by the necessary activities, and their mutual relations?

o   *Bio-climactic aspects*: Does the place provide adequate conditions of lighting, acoustics, air temperature, humidity, speed and quality?

o   *Economic aspects:* Are maintenance costs compatible with the purchasing power of the people concerned?

o   *Sociological aspects:* Does the configuration of form-space (solids, voids and their relations) imply desirable ways for individuals and groups (social classes, genders, generations) to deploy themselves in places and to move through them, and accordingly to afford desirable conditions for encounters and avoidances and for the visibility of others? Do the type, quantity and relative location of activities imply desirable patterns of utilization of places, in space and time?

o   *Topoceptive aspects*[11]: Is the place visually *legible*, i.e., does it have a clear identity? Does the place offer good conditions for *orientation*?

o   *Affective aspects*: Does the place have a clear, strong *affective personality*? How does it affect people's emotional state - e.g. *vis-à-vis* solemnity, grandeur, coldness, formality, intimacy, informality, simplicity etc.?

o   *Symbolic aspects*: Is the place rich in architectural elements that remind us of other elements on a larger scale than that those of the place in question (for example, a building that represents the whole city), or that recall non-architectural elements of a diverse nature, such as values, ideas, history?

o   *Aesthetic aspects*: Is the place *beautiful*, i.e. are there characteristics of a structured whole and qualities of simplicity/complexity, evenness/dominance, similarity/difference, that evoke qualities of clarity and originality, and in turn *pregnancy*, implying autonomous stimulation of the senses beyond practical matters? Is the place a *work of art* conveying a *world view*? Does its form-space express a *philosophy*?

Each aspect implies a structure of relations - *a code* - between two types of elements: i) attributes of form-space and ii) human expectations. Bio-climactic codes relate the size, form and disposition of apertures to the wind, on the one hand, to thermal sensations, on the other hand. Imagistic codes relate the form and disposition of landmarks, on the one hand, to conditions for orientation, on the other hand, and so on. The task of theory is to establish analytical categories for the two sorts of elements.

Furthermore, to each aspect there corresponds a certain number of analytical categories, both in the sphere of architecture and in the realm of social expectations. For example, to describe architecture bio-climatically is not to describe it aesthetically. The taxonomy presented above is continuously being submitted to testing, through evidence-based research. The challenge is to improve

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the analytical categories, either by minimizing the redundancies between those belonging to distinct aspects as, if they are the same, the taxonomic autonomy is not justified, or by discovering new categories, or by discarding those that prove to be of scant explanatory power.

Architectural codes may vary in scope, depending on the aspect. Firstly, there are *universal codes*. For example, it may be that the visual characteristics of places which enable us to memorise them clearly, are identical for all human beings, given our common cognitive apparatus (but not all places have a strong identity). Second, there are *group codes*. Here, for example, the configuration of places may have an impact on sociological expectations that are historically-determined in time and space (each social class has its code). Thirdly, there are *individual codes*. An example of this would be that aesthetically, places could affect people differently, according to values that may be highly personal, even idiosyncratic. Empathy towards an architectural object is therefore a function of the identity between an individual's world view and the view impressed on the place by its own formal-spatial configuration.

In the light of the aforementioned propositions, I put forward a definition of architecture as a reality *captured by a specific look*.

*Definition: Architecture is **place** appropriated as a means to satisfy functional, bio-climatic, economic, sociological, topoceptive, affective, symbolic and aesthetic expectations, according to values that may reside at a universal, group or individual level.*

4. The discipline of architecture: sub-disciplines and interdisciplinarity

Councillor Acácio[12] is reported to have said 'everything is complex' and he might have added, 'architecture included'. Through *aspects*, we try to overcome the obvious and to reveal what is hidden: to discriminate, separate, analyse, and so to do justice to the multidimensional nature of architecture, made explicit in the dissection presented above. The upshot is that many types of knowledge relate to the practice and theory of architecture. They vary according to the ways in which they are produced and applied (modes of thinking and acting) and according to the agents involved. Some types are more peculiar to architects, while others presuppose interfaces with other professionals or academics. In the recent evolution of thinking and making architecture, and in its relations with other fields, we can identify four 'phases' and three 'modes' in respect of the theory and practice of architecture, which have developed in roughly chronological order. ***Table 1*** (see below) will be used as a guide to the discussion.

Mode 1: architectural *savoir faire*: practical and implicit.

To each aspect of architecture there corresponds a field or 'mode' of knowledge that is partly: i) implicit, unconscious, used intuitively, and above all *practical*, because it is closely related to the *experience of doing*; and partly ii) explicit, systematic, reflexive, and therefore *theoretical*, because it *abstracts* from practice structural dimensions that may be generalisable and applicable to other situ-

ations. In the first case, (see *Table 1*, Mode 1), we are in the realm of the *savoir faire* of 'craftsmen', who absorb architectural knowledge through practice by means of imitation of their masters or by empirically observing the world, and use such knowledge in their projects. Honourable exceptions notwithstanding, Mode 1 represents the meagre importance traditionally ascribed to theoretical-analytical aspects in architectural education, where architecture is understood as an 'art' or a 'technique', to which knowledge produced *elsewhere* is *applied*, rather than as a mode in which knowledge is produced. However, it would be wrong to 'demonise' the 'unreflexive' training of intuitive master craftsmen, those 'architects of the drawing board', as they are sometimes pejoratively and unjustly referred to in the academy. They are not necessarily bad architects. If this were so, architecture would not have advanced prior to the historical emergence of the scientific mode of reasoning. Intuitive architects may be equipped with powerful antennae that allow them to apprehend reality, even if unconsciously, so as to be able to identify problems correctly and devise creative solutions. However, other modes of thinking and acting on places imply other *possibilities*.
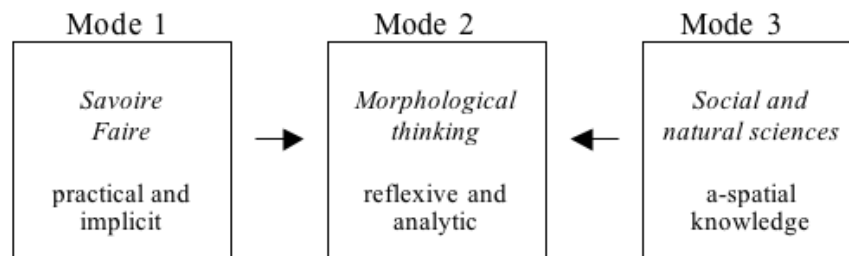
Table 1. Modes of doing and thinking architecture in recent decades

Mode 3: refuge in the a-spatial world

The identification of the problems of modern urban design from the 1950s onwards, led to a behavioural change among architects towards knowledge, resulting in an 'interdisciplinary fever' during the 1960s and 1970s. It was recognized that there was something unsatisfactory about knowledge concerning the configuration of places. Nevertheless, instead of attempting to act more reflexively regarding the configuration of places themselves, thus investing in Mode 2, architecture skipped that mode and jumped directly to Mode 3, in a quest for the wisdom that would reveal our limitations directly in the fields of the consolidated sciences, particularly the human sciences. However, this excursion into other disciplines could not help architecture to develop its own theoretical basis, not because of the limitations of these allied disciplines but because of a methodological error within architecture itself. It took some time to realise (some people unfortunately have not done this to day) that those consolidated disciplines within Mode 3 have their own methods, specific analytical categories and a vast *corpus* of knowledge that we are not acquainted with and that, above all, starts from systematic descriptions of *other realms of reality*, which are circumscribed by their own conceptual fields - not the reality of places looked at as architecture. These disciplines see the world from other viewpoints, even if they do so when they look at the same empirical objects (again the examples of the building and the mountain apply here). Above all, these disciplines do not employ a *morphological viewpoint*: they do not dissect the form-space of places in order to understand their impact on our

lives. That is why jumping from Mode 1 to Mode 3 had little or no impact on design: architecture continued to make the same mistakes. Worse, the gesture implied an abandonment of the architectural domain. This led to the realisation of so-called 'project works' in the schools of architecture. These were anything but design: they took the form of boring 'sociological' or 'economic' reports that in actual fact were neither (they might as well be products of the most varied nature)[13]. Relations with the disciplines that make up Mode 3 are fundamental for the advancement of architectural knowledge, but the relationship needs to be built in other ways.

From Mode 1 to Mode 2: intuitive architects become reflexive-analytic architects

With hindsight, we can see that the solution should not have been to abandon architecture, jumping from Mode 1 to Mode 3. Instead, we should have attempted to delve deeper into morphological knowledge, adding to intuition a measure of practical and empirical knowledge of another kind, constructed from a systematic observation of reality, to which *theoretical* thinking would then be applied in order to extract from places their structural attributes. This could be achieved by adding to Mode 1 the contents of Mode 2, which represents the field of Popper's (1963) *objective knowledge* - reflexive, verifiable, refutable, continuously and rationally enriched. This is not a novelty, but the recovery of a rich tradition, as so widely exemplified in Kruft's (1994) anthology of architecture. It would thus be incorrect and arrogant to say that only now are we generating objective knowledge in architecture.[14] The recovery of reflexive knowledge in architecture has contributed to the consolidation of sub-disciplines, 'regional' disciplines, as it were, related to the 'aspects' commented on above.

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It is the hallmark of scientific knowledge to dissect realms of reality in order to enhance understanding. This has been happening in architecture as well. Indeed, in some aspects, architectural knowledge has a longer tradition: consider, for example, the number of titles about symbolic or aesthetic aspects in architectural libraries, or the large collection of manuals of every kind dealing with functional aspects. In respect of other aspects, tradition is scarcer, though still quite strong, as in the case of topoceptive aspects, a line of research opened up by Lynch (1960), but the origin of which is traceable at least to Sitte (2002), although the latter is more commonly classified as an aesthete. In respect of yet other aspects of architecture, the tradition is virtually non-existent, as is the case of the affective aspects[15], which deserve autonomous treatment but are often mistaken for other aspects, e.g. symbolic aspects.

However, the epistemological paradigm that is still hegemonic, illustrated in the discussion referred to at the beginning of this text, is being overcome, albeit slowly. In such a paradigm, architecture is foreign to the pantheon of scientific disciplines. As a result, it suffers from an inferiority complex that makes it accept the status of an 'adjective' added to the 'substantive' or 'noun' of other disciplines with a longer tradition in research. That explains why we happily join the ranks of 'environmental psychology', 'urban economy' or 'architectural aesthetics'. By doing so, architecture persuades itself that the subject has attained a novel standard, when it was merely a consequence of the error of 'interdisciplinary fever', which has so perversely harmed the development of autonomous knowledge in architecture.

Taxonomic changes need to correspond to methodological ones. When space moves 'frontstage', in the apt expression of Carlos Nelson Ferreira dos Santos' (Turkienicz & Malta, 1986), old labels are no longer suitable. 'Substantiating' the sub-disciplines of architecture means proposing disciplines as denominated in *Table 2* below, for example. Certain expressions in the right hand column are more familiar, others less so. However, even when they are familiar, the more extant use of the terms is not related to regional disciplines, as suggested here, but to a type of empirical manifestation, thus revealing the hegemony of the old paradigm. The first idea that springs to mind when we speak of 'urban sociology' is of a solid corpus of knowledge (a discipline therefore), not the idea of empirical manifestations of urban modes of economic behaviour. By contrast, when we come across the expression 'bio-climatic architecture', the first idea is *not* one of a disciplinary field but one related to buildings that are, say, 'ecologically sustainable'. Why should this be so? Why does the expression 'functional architecture' evoke instances of modern architecture, though unjustly or even wrongly so? [16.] All this is determined by a rationale that is imposed by the hegemonic paradigm, one that must be overcome.

ASPECT	DISCIPLINE
functional aspects	functional architecture
bio-climatic aspects	bio-climatic architecture
economic aspects	economic architecture
sociological aspects	sociological architecture
topoceptive, affective, symbolic, aesthetic aspects	expressive architecture (for the whole set, or else, specifically, topoceptive architecture, affective architecture, symbolic architecture, aesthetic architecture)

Table 2. 'Aspects' and 'regional' discplines of architecture

In the new theoretical framework, the problem of interdisciplinarity is posed in a different way. We are not dealing here with corporate obscurantism that disparages knowledge from certain disciplinary fields (*e.g.* urban sociology) to the benefit of others (*e.g.* sociological architecture). There is simply no empirical object, the understanding of which can dispense with the contribution of various standpoints. The relations between people and urban space are not the preserve of either sociological architecture or urban sociology: this is a field common to both. However, the points of view of each of the disciplines differ from the outset; in method, in emphasis and in the rigor they confer on the description of the reality they are attempting to grasp. 'Sociological architects' need to offer a precise, comprehensive, profound approach to space produced or used by people. They can obtain from urban sociology the contribution they need to complete the analytic framework in respect of the attributes of the people involved. However, categories thus 'imported' are not just any categories, nor is every category of urban sociology helpful to a better understanding of architecture. Not being able to discriminate amongst categories was another error of Mode 3. They must be associated with social expectations in relation to the form-space of places so that they help us to understand people's satisfaction or otherwise as to the performance of architecture[17]. Urban sociology, in turn, does not need, nor should it attempt, to treat the configuration of cities rigorously. Rather, it should direct the focus

of its attention to relationships among people in the urban domain (social classes, genders, ethnic groups, generations etc.). It is better equipped to do this. *Mutatis mutandis*, it will turn to sociological architecture for support in completing its work: along the same sort of lines, 'importing' supplementary categories to subsidise its analysis[18].

From Mode 3 to Mode 2: the morphological field's 'seduction' of a-spatial scientists

The previous observations refer to the necessary dialogue between architects and other professionals from other fields, *while maintaining their respective identities*. But the development of architecture as a discipline has gained much more through *changes* in traditional academic and professional identities. I have already remarked on the gains that obtain when architects migrate from Mode 1 to Mode 2 (see *Table 1*). I will now take the critique of corporate obscurantism further. If the interaction between architects (now in Mode 2) and social scientists (in Mode 3) is already beneficial, as commented on in the previous phase of transformation, all the more so will this pertain if a migration occurs in the opposite direction, by scientists from Mode 3 to Mode 2. As they migrate to the centre of the diagram, social scientists turn into 'morphologists' - they become users and developers of the theoretical-methodological toolbox employed to illuminate the configuration of places, thus enriching their knowledge of this realm of reality. But this implies that they devote themselves to architectural codes, and in so doing they start to think *morphologically*, not a-spatially as was the case in their longer tradition[19].

The double "migration", from the flanking columns of *Table 1* to the central area, has brought great achievements[20]. It makes all of us 'morphological reflexive thinkers'. It lends tremendous thrust to the enriching of the disciplinary field of architecture. Otherwise, denying this necessary deepening of the understanding of architecture and instead defending a new type of 'urban generalist', a new type of 'modern Renaissance man'[21], is tantamount to attempting to recoup a position that has been bankrupt for well nigh on forty years. The degree a researcher holds, or his formal corporate affiliation is not the crux of the matter, but his *look at places*. The 'password' for entering Mode 2 is not a label on a diploma but the manner of doing and thinking architecture, that is 'morphology'.

Of the three most important teachers in my academic training - Delfim Fernandes Amorim, Evaldo Coutinho and Bill Hillier, only the first is an architect. Amorim (1917-1972), a Portuguese naturalized Brazilian, exerted a strong influence on the education of architects at the Universidade Federal de Pernambuco's Architecture Faculty for almost two decades, and was one of the principal mentors of the *Recife School*[22]. Evaldo Coutinho (1911-2007) is a telling example. With a B.A. in Law, he soon became a *de facto* philosopher and aesthetic-architect. He is the author of the classic *O espaço da arquitetura* [*The space of architecture*], (Coutinho, 1970), an essential piece of work in the field of the philosophy of art applied to architecture (or to the field of *aesthetic architecture*, in my terms). The English theorist Bill Hillier (b. 1937), with an M.A. in Literature, is the founder of Space Syntax Theory, an important line of investigation that has spread to many countries, Brazil included[23].

The 'regional disciplines' (or sub-disciplines) of architecture are thus becoming consolidated *avant la lettre*. The following examples illustrate this:

i)   manuals of all types (Neufert & Neufert, 2004; Prinz, 1980 etc.) deal with functional aspects of architecture;

ii)   Romero (1988) investigates bioclimatic aspects when she examines the relations between urban form and environmental comfort;

iii)   Mascaró (1985) investigates economic aspects when he studies relations between the configuration of buildings and their maintenance and production costs;

iv)   works by Anderson (1978, USA), Mitchell (2000, USA), Castex *et al.* (1977, France), Santos & Vogel (1985, Brazil), Hillier (1996, England) and most research on 'space syntax' figure under the label of sociological aspects, each author, in his or her own way, dealing with the relations between ways of life and urban configuration;

v)   recovering and developing Lynch's tradition (1999), Kohlsdorf (1996) studies topoceptive aspects when she relates building and urban configuration to the forming of mental images;

vi)   the symbolic dimension is the theme tackled by Silva (1985) in Brazil and the phenomenologists in general, such as Norberg-Schulz (1979) and Scully (1989);

vii)   although the literature seldom distinguishes affective aspects from symbolic ones, the former are also the focus of phenomenologists like Seamon (2000);

viii)   with regard to aesthetic aspects in Brazil, the work of Gorovitz (1985, 1993) stands to the fore.

Naturally, I have not negotiated this taxonomy with the authors. I am entirely responsible for it, depicting one approach to how the current state of architectural theory and practice may be portrayed. Many of those I have cited may well reject the labels I have attached to them, and may beg to differ from me as to the concepts involved.

The works and authors referred to above are a clear symptom that research on the diverse aspects of architecture is necessary and is actually being done. However, the 'aspect' trend, pursued in *depth*, co-exists with another more common one, in *extension*, which is equally legitimate. In the latter case, researchers prefer to consider architecture globally, not through particular approaches. They prefer to identify how the convergence of various aspects allows one to paint a panorama of architecture delimited in time and space. This is the typical approach in history courses at schools of architecture, utilizing concepts such as Baroque Architecture (delimitation in time) or Brazilian Architecture (delimitation in space). The aspects referred to earlier are still present in this tradition, though in a global manner. With reference to this option, perhaps the wider the approach the better[24].

Problems surface when we sell a part for the whole, when an option to pursue a certain approach is made in the analysis but is left *implicit*; for example, selecting the option to deal mainly or wholly with aesthetic aspects, generally predominant in the historiography of architecture. It is as if one dimension alone mattered, or at least were the most important, in all cases. This is not so. The

performance of architecture can be (and often is) contradictory among aspects - good in some, bad in others. Architectural instances become historical references when their qualities, all aspects considered, make them deserve to be so, notwithstanding their attendant problems.

Brasilia is rightly acknowledged as an important instance in the world history of architecture[25]. It is deemed so despite the sociological, economic and functional problems that it presents (Holanda, 2002, 2003, 2010), for its qualities concerning (among others) bioclimatic, topoceptive, symbolic and aesthetic aspects by far surpass its shortcomings and allow it to be legitimately classed as a World Cultural Heritage by UNESCO. It is also worth noting that some of the problems date from the original project itself, whilst others have appeared as the city has developed (Holanda *et al.*, 2002, Holanda, 2007) . It is, to say the least, curious how the misinformed, prejudiced or superficial critique of authors like Holston (1993), Rykwert (2000), Frampton, Tafuri and Zevi (Zein, 2001), disregards such contradictions and, more seriously, fails to acknowledge the city's historical importance.

5. Architecture as a human science

Human sciences are *sciences about human practices*. As Nunes has succinctly and neatly propounded[26]: philosophy studies relations between human beings and ideas; economics studies relations between human beings and things; and sociology studies relationships of human beings among themselves. Paraphrasing Nunes, I suggest: the creation or appropriation of places are human practices and the discipline of architecture as a human science studies the relations between places and people, from the following points of view: functional, bioclimatic, economic, sociological, topoceptive, affective, symbolic and aesthetic. People make themselves human by their modes of production of material goods, by the language they speak, by the symbolic systems they invent, and *by the ways they create and appropriate places*. The entire set of such 'ways', however, constitutes a vast field.

Human practices in respect of architecture include: perceiving the visual stimuli of a sequence of streets and squares and so forming a structured mental image (topoceptive aspects); being moved by the beauty of the lightness of, say, Niemeyer's architecture (affective aspects); understanding the image of the Christ atop the Corcovado Mountain in Rio de Janeiro (recently named one of the New Seven Wonders of the world) as a sign of the whole city (symbolic aspects) etc. Knowledge in all these fields may be approached in the scientific mode of reasoning and this has indeed been done, as exemplified; all are 'humanities'. To each and every aspect there corresponds a field of knowledge, a sub-discipline of architecture, as indicated above. To each sub-discipline there correspond specific analytic categories that conceptualize architecture and social expectations relating to the respective aspects. Among all these fields I will focus my attention henceforth on only one: sociological architecture.

6.Towards a sociological architecture

Sociological architecture thus considers: i) *the empirical reality "place"* and ii) *the empirical reality "social expectations"*. For sociological architecture, the *empirical reality "place"* is a system of barriers and permeabilities to movement, of transparencies and opacities to vision, of solids and

voids, impregnated by social practices. Places as architecture imply a particular organization of constitutive elements: i) surfaces, volumes, voids, on the scale of edifices; ii) buildings, streets, squares, green areas, on the scale of human settlements of any type - villages, cities, metropolises; and iii) mountains, valleys, bays, beaches, on the scale of the landscape. Places are ordered through systems of contiguities, continuities, proximities, separations, hierarchies and circumscriptions. Formal-spatial systems vary in history according to the way they explore systems of barriers and permeabilities, opacities and transparencies, in various combinations. For sociological architecture, *the empirical reality 'social expectations'* means a system of encounters and avoidances, of concentration and dispersion of people.

Each social system is an unique way of organizing groups of people in space and time; a way that establishes who is near or distant to whom, doing what, where and when. Societies differ in history and in varied combinations. Some societies are very dense, compressing in space and time all classes of people and social practices (everybody is relatively close to each other practically all the time). Other societies are very sparse, in that different types of people and their practices occur in special places set aside for each category, places that are separated by great distances or major physical barriers, where practices are enacted by persons whose interaction in space is discontinuous in time. Other societies still combine the two things - separation *cum* concentration - as is typical of contemporary societies with their 'fortified' enclaves: university campuses, civic-administrative centres, shopping centres, edge cities etc. (The classic reference for an overview of such a collection is Hillier & Hanson,1984; see also Holanda, 2002) A mass of empirical evidence points to an historical congruence between certain formal-spatial configurations and particular social systems. Societies are not infinitely malleable fitting into any straitjacket made of stone and mortar and they cannot realize their potential haphazardly in an architectural absurdity. However, much theorising in architecture fails to recognise this. The difficulty is illustrated by the ideological position of the Modern Movement, which assumed that a new society could spring directly from the drawing board[27].

Learning from the failure of the idea, today the issue presents itself to us in a different guise. Though architecture and society are recognisably different things, yet there are fundamental relations between them that deserve to be studied. To suggest a congruence between them does not imply the determination of behaviour by architecture. Rather it means realising that architecture creates *a field of possibilities and restrictions*, possibilities that may (or may not) be explored, restrictions that may (or may not) be overcome. As an example of unexplored possibilities, consider the case of public spaces that historically were designed to be full of people in rich daily interaction - the sort of *urban space* Durkheim had in mind when he referred to that produced by *organically solid* societies - that may be deserted today because lifestyles have changed although the configuration of the place has not. Where are the chairs on the pavements in the early evening in traditional suburbs of Brazilian cities? An example of restrictions overcome is that, in the limiting case of prison, prisoners may dig tunnels and escape. The facts do not deny the possibilities and restrictions *intrinsic* to architectural configurations. Instead, they reveal that relations of determination between architecture and behavior are subtler than we once thought.

Architecture neither determines our behavior as if we lacked free will, initiative and capacity to overcome limits, nor is it neutral, as the 'solution' adopted by certain theoreticians suggests. Tafuri and Rossi, for example, came to see architecture as devoid of content so that it can be referred to in any way that we choose. Ellin has summarized their position: "architecture alone cannot be democratic or fascist; only people can make it so" (Ellin, 1999:26). Léon Krier agrees: "there exists neither authoritarian nor democratic architecture. There exists only authoritarian and democratic ways or producing architecture. (…) Architecture is not political, it can only be used politically" (quoted in Ellin, 1999:31). This not only goes against good sense, it also denies a wealth of empirical evidence. On the issue of *architectural determinism* Tafuri, Rossi and Krier would appear to have 'thrown the baby out with the bath water'. Understanding relations between architecture and society on a new level and in greater depth is the challenge of sociological architecture.

In brief, *sociological architecture* as a field of knowledge akin to human sciences aims at revealing relations between architecture and society. More specifically, between, on the one hand, the configuration of buildings, cities and the natural landscape understood as architecture, and, on the other hand, the ways in which people do what they do, how they do it, where, when and with whom they do it. Put another way, the objective is to spatialise the ways in which personal encounters are structured, whether this be in a more deterministic form or in a somewhat random fashion, and whether encounters are concentrated in space and time, or otherwise. Perhaps the essential paradigmatic contribution of this insight may be expressed by the axiom: *there are intrinsic implications of architectural configurations*, translatable in terms of possibilities and constraints *contained in the configurations themselves*, which have so far been precariously understood by the literature, notwithstanding our free will, apparently disdained by the Modern Movement's deterministic aphorisms. This is crucial, for such sociospatial dimensions have profound implications concerning social structuring, access to material or immaterial resources, symmetries or asymmetries of power, as the studies reported on as follows very briefly exemplify (see also Holanda, 2002).

7. Sociological architecture - some examples

This particular way of looking at places that I have called 'sociological architecture' has motivated research and supported urban design in the School of Architecture at University of Brasilia. Giving the limited space, the priority of this text has been to focus on describing the theoretical foundations of the discipline, not on a detailed examination of case-studies. However, in what follows, I offer some summary information on such studies, while referring to other sources in which the reader may find further details. The examples cover various scales

The first example is of research on transformations of domestic space *vis-à-vis* contemporary ways of life, implying 'houses within houses'. The underpinning concept derives from an overvalorization of individual privacy by creating small semiautonomous worlds in the bedrooms of homes (França, 2001, França & Holanda, 2009). The study reveals a 'middle class domestic space code',

which is common both to the architecture produced by architects and the architecture conceived and built according to direct instructions from the owners themselves - a 'middle class vernacular' of sorts - although designed by professionals legally empowered to do so.

The next case is a project for revitalizing the W-3 Avenue in Brasilia, in which we have related morphological changes to changes in lifestyle in the Brazilian capital, that have caused the decay of the avenue, once the vital urban hub of the city (Garcia et al., 2003). We discuss the importance of including new types of domestic space in areas currently set aside for strictly commercial uses, and also the opposite through the inclusion of services in residential blocks, a proposal that actually recognises and attempts to organize a strong tendency that is occurring spontaneously today in the vicinity. We argue the sociological advantages of both types of measure, and demonstrate that they do not affect the norms concerning Brasilia as a World Cultural Heritage site as recognized by UNESCO.

The next case study is on the form-space of the Federal District in Brazil, which reveals the costs of the capital's 'eccentricity': 82% of all formal jobs are situated in an area where less than 10% of the city's population live, an area (i.e. the Pilot Plan and its immediate environs) which is, furthermore, relatively physically segregated from the metropolis as a whole (Holanda, 2003b, Ribeiro & Holanda, 2007). We show how Brasilia is an unbalanced city, by examining the relations between housing, jobs and accessibility.

The fourth study is the design of a 'superblock' in Brasilia (SQN-109) which took into account a critique of previous experiences of living in this particular housing typology (Holanda & Barcellos, 2003). Although the superblocks are bioclimatically comfortable and have a pleasant overall landscape design, many functional, sociological and topoceptive problems have been identified, which we have endeavoured to avoid in the new project.

The next example presents design projects for urban expansion created by undergraduate students to occupy central areas of the metropolis that remain empty. There are areas for new boroughs of the capital whose destination, if current rules are maintained, will reinforce the well-known sociospatial segregation of the metropolis. The students' projects propose varied building types, which would make the city more democratic in terms of spatial appropriation by different social classes. The projects are based on research results reported in the next example.

The sixth and final example summarises research on the relations between people's purchasing power and the formal-spatial configuration of housing types (Holanda, 2006, 2007). The study, which is still in progress, reveals how sociospatial segregation of the Capital derives from the project itself. The limited variety of building types in Lucio Costa's Pilot Plan (initially only six-storey-tall buildings in the superblocks and detached houses around the shores of the lake) soon led to the proliferation of satellite towns, for lower-income families. Unable to afford living in the Plan, 'inad-

equate' types of housing have been built miles away from the metropolitan core. Sociospatial segregation in the Capital was forged by public policies in response to ideological principles, not by the market forces that rule in other Brazilian cities. However, there are some areas inhabited by low income families, quite near the heart of the city: namely, Vila Planalto, the remains of a former building camp, a mere mile from Three Powers Plaza and the three-storey "JK" buildings, without pilotis or underground garages, in the heart of the South Wing of the Pilot Plan. These did not prove attractive to higher income segments. The local architecture is strongly related to the permanence of lower income families in such places, more than forty years after the city was inaugurated. These findings, if taken into account as far as housing policies are concerned, would be of great assistance in planning a more democratic city, in respect to its formal-spatial organization.

8. Conclusion

This article has supported the idea of *disciplined* knowledge. Dissecting reality into its multiple dimensions allows us to go further in understanding and improving our practices. Its message is optimistic, in that it identifies trends by which scientific knowledge in architecture is advancing. However, as with other human sciences, conflicting paradigms will co-exist so long as we live in societies in which conflicting interests clash. The knowledge they produce is a mirror image of their own nature. On the one hand, Hillier, Mitchell and Anderson shed new light on old themes; on the other hand, 'manifestos' that owe little to rigorous, evidence-based research have been produced by groups such as the *Charter of New Urbanism* (Congress For The New Urbanism, 2001), the *New Charter of Athens 2003* (European Council of Town Planners, 2003), and the book *A Vision of Britain*, by His Royal Highness Prince Charles, the Prince of Wales (The Prince Of Wales, 1989). The last has been the inspiration for a retrospective project at Poundbury, a 'new' "medieval" English town in which Léon Krier and Andrés Duany, both advocates of 'new urbanism'[28], have enthusiastically participated.

The plea for disciplinary reinforcement is also a call for an interdisciplinary approach to problems, in which participants hail from solid disciplinary positions to confront ideas and tackle practical issues. I am not suggesting that we isolate ourselves behind the closed borders of the discipline of architecture. On the contrary, this text holds out a challenge, particularly to social scientists: let us think together about the relations between architecture and society, each one of us arguing from his or her own viewpoint. Furthermore, at the end of the day let us all mutate into 'morphologists'. Let us question our respective analytical categories. Greater disciplinary rigor implies and includes the building of bridges between the discipline of architecture and the exact sciences, human sciences and natural sciences 'Bridges' make for dialogue among various viewpoints and raise knowledge to new standards of quality, but to survive life's exigencies they must be built on firm foundations. Sociological architecture is just one instance of the benefits that flow from this rapprochement.

8. Notes

2 ANPUR - Associação Nacional de Pós-Graduação e Pesquisa em Planejamento Urbano e Regional [Urban and Regional Planning Graduate Studies and Research National Association].

3 The session was coordinated by Geraldo Magela with the participation of Brasilmar Ferreira Nunes, Flávio Villaça, Roberto Luis de Melo Monte-Mór and Bertha K. Becker. The author participated from the floor.

4 The expression is mine, not Monte-Mór's, but it seems to me to reflect the gist of his argument. I apologise in advance for any misinterpretation of the ideas of colleagues, to whom I devote great respect and affection.

5 The majority of the literature attempts to explain architecture through its 'determinants'. More specifically, architecture is explained by its economic determinants, particularly in the soi dizant Marxist tradition (for a discussion of such misinterpretations of Brasília, see Holanda, (2002). Another version attempts to understand architecture through its 'intentions', whether explicitly revealed in the discourse or otherwise. Even when 'intentions' are spelled out by architects, let us not forget that this remains discourse that may, or may not, reflect reality. Discourse can conceal the actual performance of buildings, both when they are proffered in good faith and when they misrepresent reality in some respect. In the first case, this may be due to incorrect knowledge, in the latter, due to perverse interests that should not come to the fore.

6 This includes the well-known POE (post occupancy evaluation) trend. In Brazil, for example, Ornstein, 1997.)

7 Similar ideas were published for the first time in Holanda & Kohlsdorf, 1995. The version here presented is entirely my individual responsibility.

8 "The most restricted of all arts, architecture is, above all, construction, but construction conceptualized with a view to the plastic ordering of space and resulting volumes, according to a certain epoch, environment, technique, program and intention" (Costa, 1980). It is clear that Lucio Costa refers to aesthetic intentions, implying 'good aesthetic quality'. I argue, however, that all buildings have an aesthetic performance - good or otherwise; bad performance does not exclude the building from the 'family'. Actually, understating the reasons behind such poor performance is an important theme for theorising in architecture.

9 "Architecture begins when the configurational aspects of form and space, through which buildings become cultural and social objects, are treated not as unconscious rule to be followed, but are raised to the level of conscious, comparative thought, and in this way made part of the object of creative attention." (Hillier, 1996:45-6). The passage is in Chapter 1, entitled, precisely in Lucio Costa's spirit, 'What architecture adds to building'. Hillier displaces the focus from empirical reality to the process of making architecture. His reduction is even less convincing because the emphasis is not aesthetic but sociological (i.e. the nature of the social process), the dominant attention of space syntax theory. Research has demonstrated that, in fundamental 'sociological aspects' (see below), there is little difference between anonymous (or 'vernacular') and erudite architecture. Case-studies will be referred to below.

10 Evaldo Coutinho is concerned with architecture as a vehicle for a world view. For him, only internal space constitutes architecture, because there spatial attributes are more controllable for communicating a philosophy - this occurs much less in open spaces, in which the architect does not have the same degree of control over light, sounds, temperature, smells. (Coutinho, 1970.)

11 Topoceptive is a neologism created by Maria Elaine Kholsdorf (Kohlsdorf, 1996), meaning space perception, i.e. according to the Merriam Webster Dictionary, "the perception of direction, distance, size, and other spatial facts".

12 A well-known character in Eça de Queirós' novel O primo Basílio, who loves to state the obvious only couched in pompous language.

13 As teachers and students of the 1970s, we know the serious damage this has caused architectural training. Anything served in the name of 'interdisciplinarity', as the final product for the course, from musical performances to installation art using, for instance, syncretic religious elements from Brazilian macumba. See similar comments in Zein, 2001.

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[14] It would be more adequate to say that the break in the 1960/1970s marks the end of one 'paradigm' and the beginning of another. The progress of knowledge is discontinuous - these are Kuhn's 'paradigm revolutions' Kuhn (2003). In architectural theory, recent decades have borne witness to one such revolution.

[15] Unpublished study carried out with students of Architecture at Faculdade de Arquitetura, Universidade de Brasilia (Holanda, F. de. Afetos da arquitetura. Brasília: s.n., s.d .).

[16] As Anderson rightly observed when he commented that 'function' is a fiction in a double sense: in the sense of encapsulating a lie, for functional architecture is simply impossible; and in the sense of providing a narrative, for 'function' in architecture is always historically articulated with values, ideas, lifestyles (Anderson, 1995).

[17] The multidimensional nature of our expectations demands the 'importation' of categories from various disciplines, depending on the aspect. For example, in the sociological aspects, I have imported from Giddens (1973) the concept of social class in advanced class societies, in order to analyse their various behaviours in relation to space in the city of Brasilia (Holanda, 2002); for the functional aspects, we have to import categories from ergonomics; for the bioclimatic aspects, from biology, climatology and physics; for the topoceptive aspects, from psychology; and so on.

[18] Hillier and Leaman approached the issue in pioneering papers back in the 1970's: Hillier & Leaman, 1972, 1974, 1976.

[19] However, there are many scientists who are 'morphologists'. This is the case with Durkheim (1964) in respect of his concepts of organic solidarity and mechanical solidarity, clearly spatial concepts, fundamental for the understanding of urban and non-urban ways of living; and of Lévi-Strauss (1977), in his classic analysis of the Bororo village; of various works of Michel Foucault, Erving Goffman, Pierre Bourdieu, Marc Augé, Michel de Certeau etc. Their contribution to architecture is invaluable.

[20] I view with great optimism excellent research work produced by undergraduate students in architecture, thus revealing promising academics (migration from Mode 1 to Mode 2). At graduate level in architecture the participation of students coming from apparently distant academic areas (migration from Mode 3 to Mode 2) sheds light on morphological questions. For example, I cite two PhD dissertations recently completed under my supervision: Franciney Carreiro de França (The indiscipline that changes architecture: the dynamics of domestic space in the Federal District, Brazil) and Rômulo José da Costa Ribeiro (A composite index of urban quality of life - space configuration, socioeconomic and urban-environmental aspects), who read for bachelor degrees, respectively, in mathematics and geology, and bring to the field of architecture advanced procedures in quantitative and geo-processing techniques respectively.

[21] As proposed by Robert Weaver (1968), quoted in Ellin (1999, p. 65). The idea has even resulted in the creation of interdisciplinary undergraduate courses offering bachelor degrees in 'generalities'.

[22] "Because of the quality and the relative homogeneity of the architectural production of the period, many authors suggest the existence of a 'school of architecture' - the 'Recife School' (Amorim, 2003.)

[23] Bill Hillier wrote with Julienne Hanson the book that first brought together the principal aspects of the theory (Hillier & Hanson, 1984). They subsequently published individually Hillier (1996) and Hanson (1998). International Symposia every two years have been held since 1997 and have brought together academics and professionals dealing with the theory from the five continents. In Brazil, researchers are concentrated in the universities of Rio Grande do Norte, Pernambuco, Brasília, Santa Catarina and Rio Grande do Sul. I practically witnessed the birth of the theory during my graduate studies at the University of London, in the 1970s. It was employed in my MSc dissertation and in my PhD thesis, the latter published as Holanda, 2002, both written under Bill Hillier's supervision.

[24] In Brazil, the paradigmatic example of the tradition is the pioneering work of Nestor Goulart Reis Filho. When research in architecture was held to be something done by 'dilettante intellectuals', Reis published his seminal Contribuição ao Estudo da Evolução Urbana no Brasil (1500-1720) (1968) [Contribution to the study of urban evolution in Brazil]. Since then he has contributed uninterruptedly to the understanding of Brazilian architecture. He has written and organized 18 books (http://buscatextual.cnpq.br/buscatextual/index.jsp, accessed 03/04/2006). Of course, pioneers of architectural theorization before Goulart can be cited, among them Lucio Costa from the 1930's onwards (Costa, 1995).

[25] I stress that I use the term 'architecture' in the broadest sense, including all scales - building, urban, landscape configuration.

[26] Brasilmar Nunes, verbal communication at the panel session referred to at the beginning of this text.

[27] I have discussed the theme of 'architectural determinism' in greater detail in Holanda, 2003, pp. 18-39.

[28] Poundbury was built on an estate belonging to Prince Charles. See an excellent discussion in Williams, 2004.

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