MUSEUM BUILDING DESIGN AND EXHIBITION LAYOUT:
patterns of interaction

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Abstract

A theoretical as well as practical key issue in the design of art museum and galleries is how the layout of space interacts with the layout of objects to realise a specific effect, express the intended message or create a richer spatial structure. To fully understand this interaction entails answering three critical questions: Does the spatial design makes a difference, and if so, what kind of difference? How does it relate to the curatorial intent? What dimensions of our experience of museums are determined by the way galleries and objects are organized spatially? These questions are addressed in this paper against the background of a coherent body of literature which, using the space syntax theory and method, offers a certain rigour in the analysis of spatial layouts, and within the context of a smaller, less systematic body of object layout studies which, focusing on curatorial intent, looks only obliquely at space. It is the intention of this paper to try to develop a synthetic overview of spatial and object layout within a single theoretical framework, seeking to contribute to a better understanding of museum morphology. This combined framework is built through a series of paired case studies of European museums and galleries specially selected, and designed to allow the pursuit of specific theoretical questions. Setting out from the spatial model established by syntactic research, the paper explores the interaction between the different components of this model, and their relation with, on the one hand, display strategies and, on the other hand, visitor experience, including as manifested in observable patterns of visiting. It shows that the main dimensions of variability of spatial layout and display strategies derive from a set of basic principles, given as possibilities to be explored and combined. Depending on the way museums use these principles, it is possible to distinguish between museums that intend to convey a pre-given meaning and reproduce information, and museums that aim at creating fields of possible meaning and producing a richer spatial structure.

Introduction

How does architecture affect our experience of museums? How does it relate to the '*art of exhibiting*'? [i]. Intrigued by these questions and guided by the belief that space can be seen as the content of the museum building, as important as the objects themselves, this paper presents research findings regarding the interaction between spatial design and display layout. Theoretically informed by the art historical

literature (Duncan and Wallach 1978; Staniszewski 1998; Noordegraaf 2004), and building upon the accumulated syntactic studies of museums (recently reviewed in Hillier and Tzortzi 2006), it seeks to develop a theoretical understanding based on empirical knowledge and comparative, intensive, and on the spot study of a range of real cases. Though the description of the 'phenomena' –that is, the visitor pattern considered as the dependent variable- has been a basic point of departure of the research, used to reconsider the architectural and curatorial intent seen as the independent variables, the paper will focus on the latter, and make only references in passing to the empirical part of the research [ii]. Precisely, the first part of the paper discusses the main dimensions of spatial variability in the selected museums, while the second directs attention to the variability of display strategies. On this basis, the final part seeks to build an overall model of the underlying principles that govern different possible forms of layouts and their implications on the main dimensions of our experience of museums.

Before developing the argument, a few words on the rationale of the case studies are in order. The cases were selected from different time periods and European countries while a variable was held constant: that they were all art museums that house permanent collections (which are either arranged permanently or reconfigured on a regular basis), and their spatial design was conceived with specific collections in mind. The first pair includes the Sainsbury Wing, the extension to the National Gallery, London, and the Castelvecchio Museum, Verona (Italy), museums which illustrate two almost opposite layouts - a grid and a sequence- and differ emphatically with respect to the way they relate building design and exhibition set up [iii].The second comparative study focuses on museum settings that, unlike the previous ones which are spatially opposites, share in common similar spatial themes, allowing a comparison in search of the effects of strategic differences: the Pompidou Centre, Paris, and two Tate galleries, Tate Modern and Tate Britain [iv]. The third contrasting pair, the Kröller-Müller Museum, Otterlo (The Netherlands) and the Louisiana Museum of Modern Art, Humlebaek (Denmark), enables looking at the issues previously raised in a comprehensive way, establishing a distinction between a *building* designed to convey *symbolic* information, and a *place* created to articulate an *aesthetic* experience [v].

Table 1:

The sample of museum settings: basic information

MUSEUM	LOCATION	ARCHITECT	YEAR (OPEN)	COLLECTION
SAINSBURY WING	London, UK	R.Venturi	1991	Early Renaissance collection (1260-1510)
CASTELVECCHIO	Verona, Italy	C.Scarpa	1964	Veronese sculptures and paintings (12th – 18th c)
TATE3	London, UK	J.Herzog&P.de Meuron	2000	National collection of 20th c. art
TATE5				
POMPIDOU4	Paris, France	R.Rogers&R.Piano	1977	National collection of 20th c. art
POMPIDOU5				
KRÖLLER-MÜLLER	Otterlo, The Nederlands	H.van de Velde	1938	Originally private collection of modern art (mainly of the 2nd half of the 19th c. – beginning of 20th c.)
LOUISIANA	Humlebaek, Denmark	J.Bo&V.Wohlert	1958	Originally private collection of modern and contemporary art (after 1945)

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Figure 1:

Views of the museums of the sample: Castelvecchio (a), Sainsbury Wing (b), Pompidou (c), Tate Modern (d), Louisiana (e) and Kröller-Müller (f)

A Model of the Main Dimensions of Spatial Variability

It has been argued (Huang 2001) that what defines the museum as a spatial type is two spatial elements that recur often enough to be characterized as *genotypical themes*: the organization of spaces in a *visitable sequence* and the *gathering space*, the recurrent space in the sequence. These key spatial aspects create the two kinds of interface, characteristic of the museum as a building type: on the one hand, between visitors and curators -expressed in the arrangement of objects- (*informational* dimension), and on the other hand, among visitors (*social* dimension).

The Ordering of Spaces into Sequences and the Morphology of Exploration

Let us consider the second component of the spatial model first, the organization of viewing spaces in a sequence, a principle intrinsic to museum design and instrumental for the accommodation of visitors'

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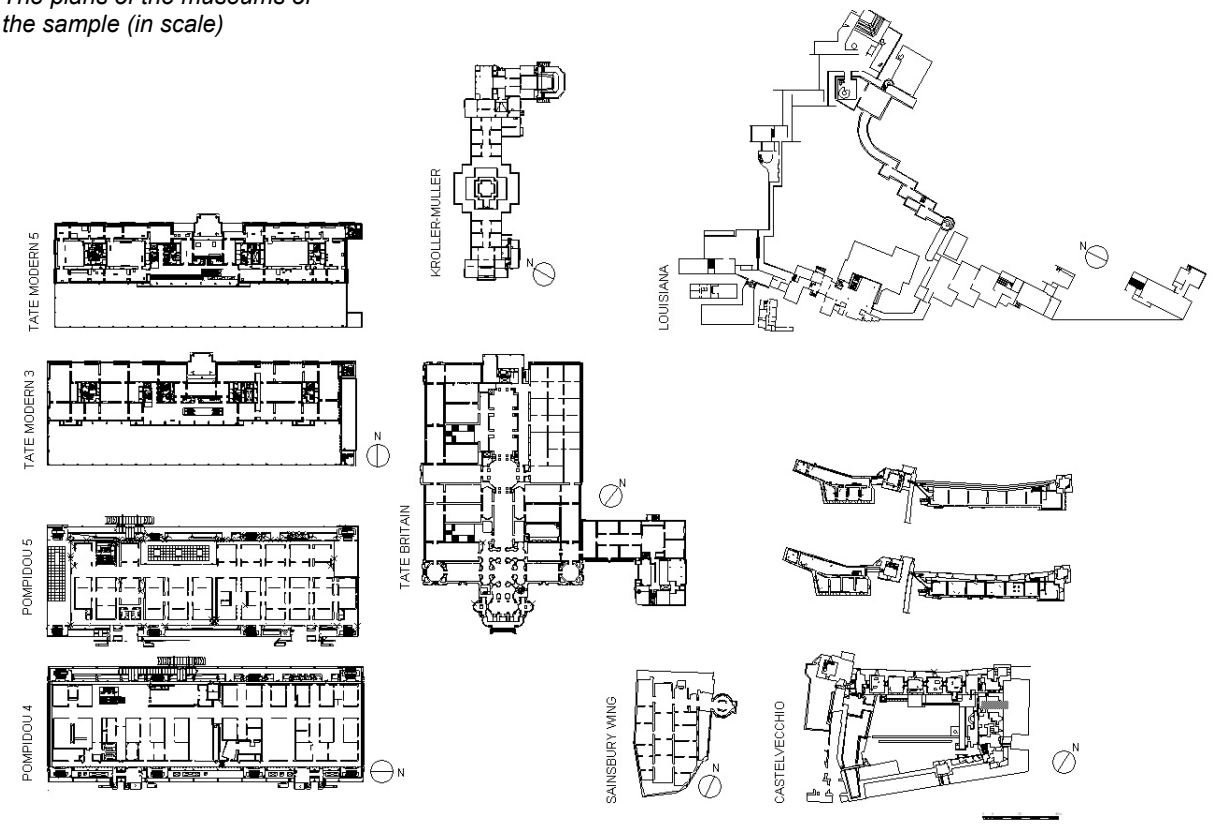
movement as well as the arrangement of objects. Looking at the case studies, we find approximations of the two theoretical extremes: at one extreme is the grid, which is impossible to visit in an orderly sequence, but minimises the control that the layout places on the visitor and consequently, maximizes the randomness in the pattern of movement and exploration; in our sample, the grid is exemplified by the Sainsbury Wing. The other polar case is the single sequence, which imposes strong rules in the pattern of movement, and powerfully controls the pattern of exploration since visitors have to go through the same sequence of spaces in the same order with no option of changing the course. It is best illustrated by the layout of Castelvecchio, which forms in effect a single ring of spaces. The *grid* and the *sequence* articulate the variety of layouts exemplified in the sample. Pompidou, Tate Britain (and to some extent Kröller-Müller) are in effect *sub-types of the same type*: there is a main sequence with sub-sequences, which constitute discrete experiences, but are dependent on the main axis, since one is forced to return -once or regularly- to the same space.

Figure 2:

The plans of the museums of the sample (in scale)



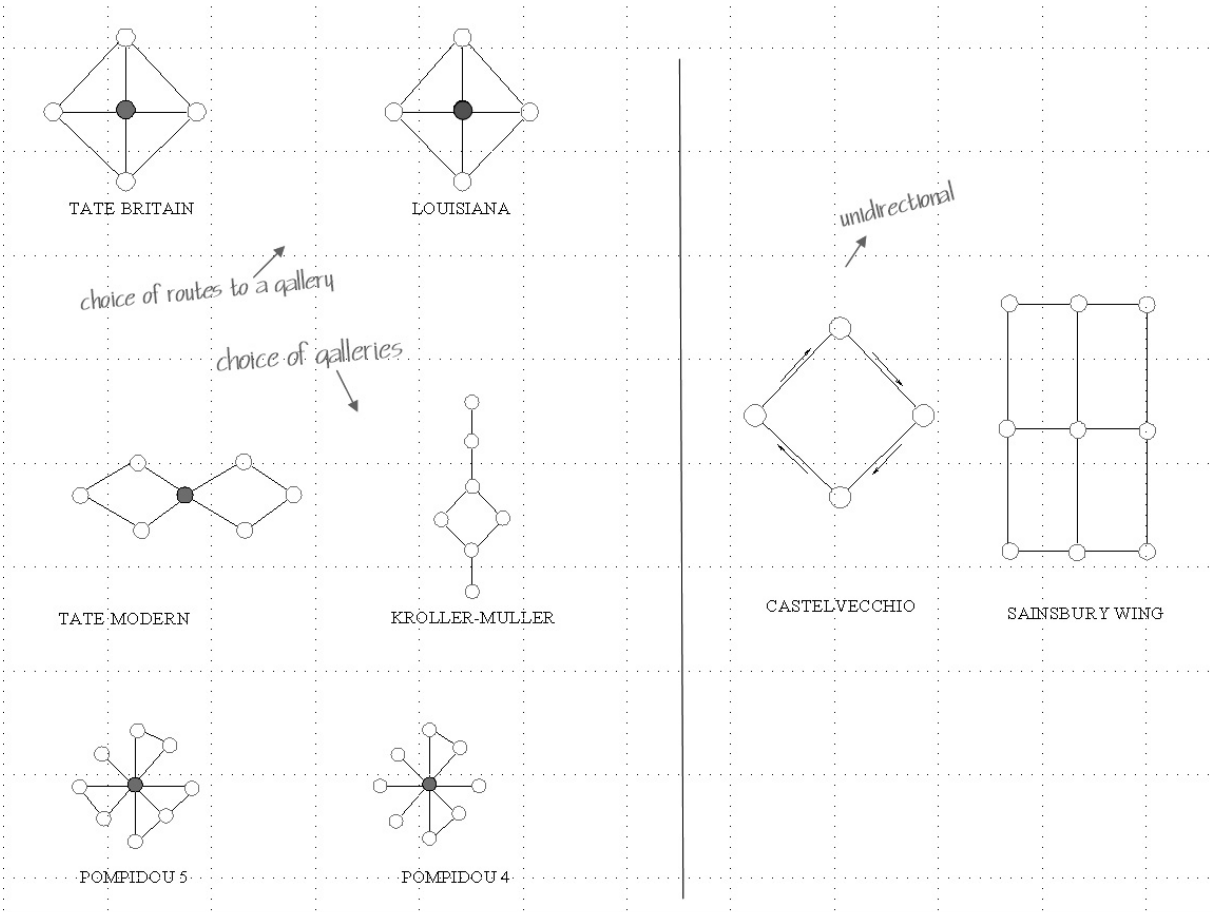
To make visually clear these strategic differences in the underlying spatial *structure* which relate to the organization of movement, we suggest representing museum layouts as schematic diagrams. A key point can be immediately made: the dissociation between geometry and topology. Let us look, for example, at two museums that have no geometrical resemblance: the formalised neo-classical layout of Tate Britain and the asymmetrical arrangement of Louisiana. On geometrical grounds, one could hardly expect common ground between these two cases in terms of organization of circulation, but this is exactly what is brought to surface by their almost identical graphs.

But how are these differences relevant to the way museums function? At a basic level, the ability to identify the relational properties of layouts that transcend differences in geometry allows us to draw a fundamental distinction between museums that provide *choice of*

routes to (most of the) galleries - illustrated in our sample by Tate Britain and Louisiana-, and those that permit *choice of galleries*, exemplified by Kröller-Müller and Pompidou4. In the former case, the spatial structure allows alternative route choices from one part of the layout to another (that is, at a global level), which, consequently, generate a probabilistic distribution of people. By contrast, in the latter case, choice is offered at a localized level but this becomes essentially merged in the global well defined route.

Figure 3:

Schematic diagrams of the museum layouts of the sample



But what seems critical in the organization of circulation is the ratios between pairs of *space-types* and the way they relate to one another with respect to the overall system in which they are embedded. This argument can be confirmed by a pair of illustrative examples, Tate3 and Louisiana. Tate3 has a high ratio of choice-spaces (*d-spaces)* [vi] in the layout, the highest in the sample; yet, choice seems illusionary as we have to do with localised *d-complexes* disposed in such a way in the dominantly sequenced spatial complex that one cannot take significant route decisions. By contrast, Louisiana does not have a high *d-ratio*, but it is the embedding of the powerful central space, the park, into the layout that critically affects the whole itinerary and offers choice at the global level. It follows from the above that an interesting tension arises between the global and the local properties of space as visitors move around -a point that will be better clarified after the discussion on the social implications of the ordering of spaces.

The Gathering Space and the Morphology of Encounter

So let us now turn to a close examination of the way the museums of the sample interpret the common spatial theme of the *gathering space*, and what the critical implications of these different interpretations are. The basic axiom of space syntax, the unprogrammed social effects of the arrangement of space, informs our analysis of the morphology of

co-presence and encounter in the museums of the sample: significantly, it enables us to look for the social function over and above the programmed space that the museum provides to accommodate encounter, and seek social effects in the way the gathering space of the museum relates to the galleries, and in the gallery sequencing.

The syntactic literature and the analysis of the selected museums suggest that the gathering space is more than the obvious social gatherer; it is the space that assumes a variety of key functions: from playing the role of the reference point in the spatial sequence and providing orientation, to working as the space of large-scale circulation that imparts movement to the galleries and, as a consequence, the space where local movement is interfaced with global movement. From a syntactic point of view, the gathering space tends to be part of the *integration core* of the gallery, and by implication, by being most directly accessible, it attracts higher movement and maximizes the opportunities for co-presence and encounter.

However, these properties do not seem to determine the shape of the gathering space. Interestingly, its form varies considerably from one case to another, allowing a critical distinction between the museums of the sample on the basis of the geometrical properties of their gathering space: at Tate Britain and Pompidou, it stretches in space and takes the form of the *axis;* at Tate Modern, it is represented by the *escalator space*; more surprisingly, at Louisiana, it takes the form of the *park*.

What is of particular interest is that even within the museums where it takes the form of the *axis*, that is, Tate Britain and Pompidou, meaningful functional differences arise from the way it is embedded in the global system, reinforcing the argument made earlier. At Tate Britain, the axis does not organize the whole building; the complexes of spaces on both sides structure independent routes, that allow the exploration of the gallery independently of the axis; so one can make the whole route just by crossing once the main axis to get from one side of the gallery to the other. Furthermore, the gathering space is the key element in the *shallow core* of the gallery, which, by linking the entry to the building to its deeper parts, interfaces in-and-out movement with movement around the complex, and creates the emergent *churning* effect (Hillier et al. 1996): people who enter the museum together, split onto different paths, and then re-encounter each other probabilistically, at some point of their itinerary.

On the contrary, the main axis at Pompidou5, though it is also the *integration core* of the layout that spreads out at full length, assumes a different function. It organizes the whole layout and links the sub-cycles on each side, but as these are not interconnected, and circulation choices are restricted on the local scale, people have to return to the main axis regularly and in a certain order. Moreover, the fact that it also works as the way back, further reinforces its role as an ordering device and contributes to its overwhelming presence. It could therefore be argued that what differentiates the axis at Pompidou from that at Tate Britain is the degree of compulsion: while the latter permits movement and empowers visitors, the former enforces movement and guides visitors' exploration.

More surprisingly, and despite initial appearances, the *park* at Louisiana plays the role of the axis at Tate Britain, in that it opens up the exploration dimension, by allowing significant route choices. In both cases, the gathering space, the main integration space of the layout, works as a generative social space, and the pattern of encounter is a global emergent phenomenon, rendering the whole experience much richer socially. However, the gathering space of

Louisiana differs from that of Tate Britain in terms of shape, since it increases *convex synchronicity* [vii] by increasing the two-dimensional space invested in the park, in contrast to the latter which increases *axial synchronicity* by increasing the one-dimensional space invested in the main axis. This differentiation might indicate a different functional emphasis: on social interaction, in one instance, and on organization of circulation, in the other. A second point derives form the first: though the gathering space -the park- at Louisiana operates as part of the display, it is outside the museum building, and more importantly, it is not a compulsory space (as in Tate Britain), since the localized sequences allow for a continuous circuit of movement; yet it constitutes an essential part of the experience, and more importantly, it extends the pattern of socialization outside the galleries.

Returning to the sample, we find that the remaining museums miss this extra resource. The Sainsbury Wing has no gathering space; yet it seems that the visibility structure of the layout –i.e. open spatial relationships, rich cross-visibility- acts on the pattern of co-presence: it enhances co-awareness, rather than co-presence, and sustains a dense pattern of visual encounter; and this can be seen as the most primitive form of socialization.

Castelvecchio, Kröller-Müller and Tate Modern do not really add social experiences; or if they do so, it is at a localised level. This is an interesting distinction between Louisiana and Tate Britain, on the one hand, and Castelvecchio, on the other hand: in the former, the local groups of visitors are linked to a between-groups contact in the large-scale movement space (the park or the axis), while in the latter, it is the short and local encounters that are reinforced. Though at Tate Modern the escalator space operates like a gathering space, which is visually on the main axis and part of the integration core of the gallery, it is in effect located outside the viewing sequence, and so it does not play an active role in the organization of movement within the limits of the exhibition space; rather it tends to be constrained to the global circulation function and so it seems more instrumental than social. Adopting two terms coined by Borhegyi (1968, p.43), we could describe the key difference between the central space at Tate Modern, and the gathering space in the rest of the cases as follows: the former is *sociofugal*, intended to distribute visitors, while the latter are *sociopetal* spaces, intended to bring people together.

A main conclusion that can be drawn from the foregoing discussion on the main dimensions of spatial variability in museums is that a critical tension is created between social and informational function. This tension arises as a contrasting requirement in cases where the layout of space, dictated by the order in which information is received, operates to enforce spatial separation, rather than to create connections (e.g. Kröller-Müller) [viii]. But the reverse can also happen, and the informational function can contribute to enhancing the social function, in the cases where the spatial proximity required by the organization of information maximizes the randomness of encounter and creates the conditions for social interaction (e.g. Louisiana) [ix].

A Model of the Basic Dimensions of Variability of Display Strategies

Having explored the interaction between the different components of the spatial model, and their relation with visitor experience, let us now discuss the second critical issue of this paper, the interaction between space and display. In what follows it will be suggested that depending on the way fundamental spatial qualities -such as, hierarchy, axiality and perspective- and key configurational properties –as, for instance, *integration, connectivity* and *control*- are handled in respect to display decisions, a basic distinction could be drawn between three main

strategies of relating spatial and display layout -each with its own affects and consequences: using space to enhance the impact of objects, or using objects to enhance space, and a third possibility, that space and display retain their autonomy.

Exploiting Space to Enhance the Impact of Objects

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Let us begin by the most common strategy, adopted by the majority of the museums of the sample -Sainsbury Wing, Pompidou5 and Kröller-Müller-, according to which the display layout exploits the qualities of the setting in order to maximize the impact of the objects. A distinguishing spatial quality of the three museums and a consistent property of their display, is cross-visibility, aiming on the one hand, to create a visual effect and on the other hand, to operate as a powerful means for mediating additional relationships between works, multiplying affinities and cross-references.

But at a more fundamental level, it appears that curators tend to relate the distribution and categorization of objects to spatial decisions. The three museums under consideration are characterized by a hierarchal spatial organization. In other words, they structure space in such a way as to privilege certain galleries with respect to others, by means of direct accessibility, ample or distant visibility, and rich network of connections. Interestingly, spatial hierarchy is closely interwoven with curatorial choices, meaning that the hierarchy of access and subdivision tends to correspond to the hierarchy of the works displayed. Let us consider, for example, the Sainsbury Wing and Pompidou5: they both use the key property of depth, but invert it. In the case of the Sainsbury Wing, some key displays are in sets of spaces of more restricted access, located at the deepest parts of the gallery, in dead-end rooms. In contrast, at Pompidou5, key displays are richly connected and among the most integrated and strong control spaces of the layout. In other words, the two museums seem to proceed from opposite principles in their attempt to induce movement and increase the probabilities that objects will be seen: in the first instance, by drawing people further into the deepest parts of the gallery and trying to inhibit the bypassing of rooms; in the latter, by exploiting movement generated by the most integrated spaces in order to attract higher densities of viewing in these spaces [x].

We begin therefore to see that this close link between design choices and display decisions can extend beyond the aesthetic and visual aspect, and that *syntactic* (spatial) and *semantic* (objects) aspects of the layout seem in some kind of a relation of *correspondence*, meaning that we understand the relation of works of art by the proximity and the relation of spaces.

Using Objects to Create Space

Castelvecchio and Louisiana offer the opportunity to identify another possibility of relating space and display layout, which involves the opposite curatorial choices: instead of the exhibition layout exploiting the qualities of the setting in order to maximize the impact of the objects, the exhibits are set so as to emphasise and bring out the qualities of architectural space.

Intriguingly, though Castelvecchio has spatial qualities similar to those of the Sainsbury Wing, these are used in a diametrically different way. The long perspective vistas that are end-stopped by blank walls, instead of key paintings, are a good case in point. This may be related to the fact that the arrangement of objects is not aimed at inducing through movement. On the contrary, structure of space and distribution of objects seem to work together so as to encourage local exploration, slow down visitors' paths, and delay the rhythm of perception. Statues first encountered from behind, require the viewer

to move close to, and around them; paintings detached from the static wall surfaces and treated as three-dimensional objects, are used to re-order and articulate space, offer short-term destinations, and screen what is ahead. Similarly, recurrent are the galleries at Louisiana that afford a bird's-eye view over the adjacent room, enhancing spatial sense. It may therefore be argued that, rather than being a function of decisions dependent on the relational properties of the layout, the arrangement of objects arises from the integration of objects within their immediate architectural/spatial setting; so here we have to do with the inverse relationship between conceptual and spatial structure, that is, a *non-correspondence* relation.

Figure 4:

Installation views of the collection at Louisiana (a) and Castelvecchio (b)

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Space and Display Retain their Autonomy

Let us now consider a completely different approach, illustrated by Tate Modern and Pompidou4: the neutralized spatial design distances itself from the objects, and the layout appears to unfold almost automatically and quite independently from the presentation of the collection. What seems particularly intriguing is that, though the spatial properties of their layouts resemble to a large extent those analyzed earlier (cf. Sainsbury Wing, Castelvecchio), they appear to have no critical role in the organization of the displays. The intersecting axes organizing the plan, both at Tate Modern and Pompidou4, are not exploited to enhance the impact of objects nor used to add to the narrative; the distant visibility, key quality of both layouts, is seen as a functional end in itself, contributing to the clarity of plan, rather than a spatial tool for expressing the intended message or lending emphasis to the experience of space. This points perhaps to the conclusion that function (i.e. intelligibility, global orientation) defines a particular way of organizing the building, which, however, does not relate to the arrangement of objects.

Taken together, these display strategies seem to suggest that in addition to the experience of objects (*informational*) and that of other people (*social*), we begin to see another critical dimension to the way we experience museums and that is the *experience of space* itself (see below). A second idea follows from the first: it is not only the architectural strategies that affect curatorial choices but strategic curatorial decisions can determine our spatial experience. The last two contrasting display strategies constitute evidence of this. In one instance, by using objects to create space, curators expand the spatial potential and enhance our experience of space; in the other, by distancing the display from the spatial design, they place the experience of space in the background, as a passive and inert frame for the foregrounded display.

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Theoretical Synthesis

In the light of the above discussion of alternative solutions to the key issues involved in the design of museums -which have been described above in terms of tensions between three things: the ordering of spaces into viewing sequences and the gathering space; the informational and the social function; and the spatial design and exhibition set up-, the final part of the paper attempts a theoretical synthesis. Building upon the recurrent in space syntax theory *short-long model* distinction [xi],it proposes a fundamental distinction between the two extreme theoretical possibilities of laying out space and objects: the *long model* set-up, meaning a strongly structured organization, which is associated with a *conservative* (or *reflective*) way of using space, aiming to restrict relations (i.e. among objects, among viewers) and *reproduce* something already known; and the *short model* layout, less structured and so less redundant (or more original), which is associated with a *generative* (or *morphogenetic*) mode of using space, acting to *produce* emergent relations, to *create* something that did not exist before.

Table 2:

The space and display layouts of the sample on the short-long model grid

object layout \ space layout	LONG								SHORT
LONG				TM					
	KM								
						SW			
							PO5		
									TB
			CV						
								LOU	
SHORT					PO4				

Conveying Pre- given Meaning

Looking at the sample as a whole, there is a comparable spatial style to be immediately observed between the Sainsbury Wing, Pompidou5, Kröller-Müller and Tate Modern. Each museum exhibits geometrical order -manifested in symmetries of shape and application of proportions-, and displays spatial *order* [xii] -expressed by the more or less identical spaces (or sequences of spaces) that make up the layout, arranged in similar spatial relations. In all four cases, long axes traverse the building in its length and width, constantly giving clues about the global structure of the gallery, and responding to the key concern for lucid organization of spatial elements, while axially synchronized views, revealing vistas, and relatively uniform isovists, enhance *information stability* (Peponis et al. 1997). But on the other hand, providing the viewer with a large flow of visual information beyond the space he is in, means reducing unexpectedness and spatial anticipation, and decreasing the impact of visual impressions.

Figure 5:

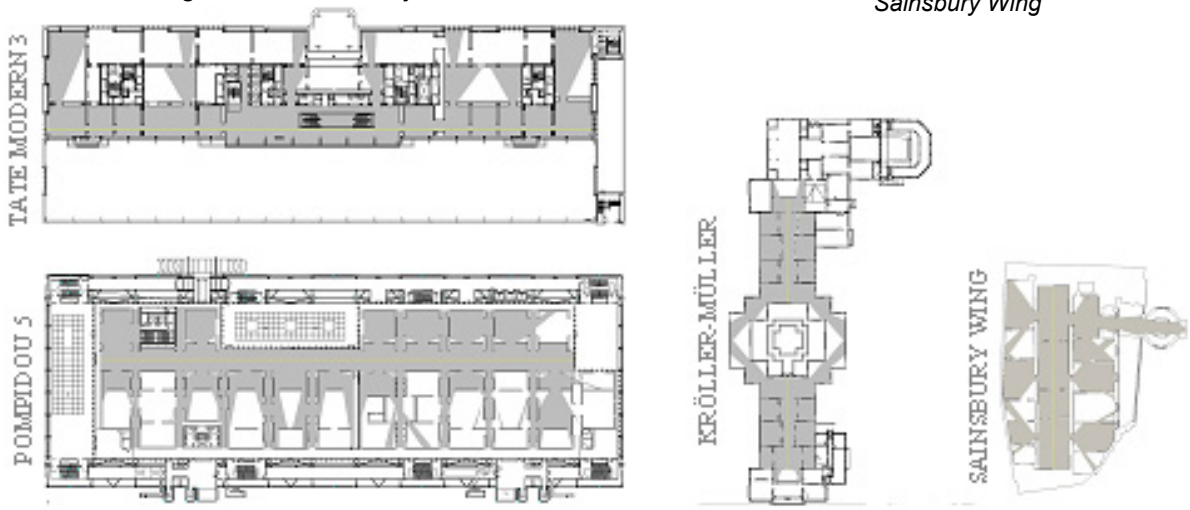
Long axes traversing the length of the building, a key spatial feature of Pompidou (a), Sainsbury Wing (b), Tate Modern (c) and Kröller-Müller (d)

Even more remarkably, there is more than a little similarity between the four museums in they way they structure space. As argued above, all layouts guide exploration and restrict random patterns of movement, though to different degrees. By implication, the field of encounter seems enforced, rather than dynamically generated.

But perhaps more significantly, it is the way the four museums relate layout of space and objects that invites their linking together under the characterization of *long models*. To explain this, we must first note that in these cases we have to do with either a *chronological* (Sainsbury Wing, Pompidou5), or with a *conceptual* arrangement of objects, in the sense that their spatial organization reflects the development of a particular argument (Tate Modern), or a specific view of art (Kröller-Müller) [xiii]. In other words, we have a mode of grouping that is marked by a high degree of conceptual intervention by the curator and noninterchangeability among objects within the display. Furthermore, the message to be communicated is well defined, and more importantly perhaps, it is a *transpatial* message, based on a specific concept or argument which is realized in spatial form. Especially in the cases of the Sainsbury Wing, Pompidou5 and Kröller-Müller, layout of space and objects point in the same direction to support each other (cf. *correspondence model*), and by doing so, they reinforce the redundancy of the message and decrease the unexpected, in order to effectively convey the intended, specific meaning. It could therefore be argued that in these cases, space *represents* rather than presents; the way objects are put together means something other than the objects themselves.

Figure 6:

Line isovist drawn from the main axis of Pompidou, Tate Modern, Kröller-Müller and Sainsbury Wing



It follows that in *long model* museums, through the arrangement of spaces and objects the designer (architect or curator) controls the information and reduces the exploratory aspect of the visit both spatially and intellectually. So in both these senses, space is used in a *conservative* way so as to *reflect* something already known, to reproduce a set of relationships previously specified, and restrict randomness both in the experience of objects and in the experience of

other people. The emphasis is on the intellectual communication and comes to the fore, with the spatial and social experiences in the background. Perhaps the didactic gain can be seen as potentially counterbalancing the lack of unpredictability and the absence of variety of experiences. Because, it is clear that, rather than the spatial means, in a *long* model museum, priority is given to the functional ends, since there is the characteristic of intent, to convey a precise meaning (Moles 1966).

Creating Meaning

Coming back to our sample, we find, at the other end of the scale, Castelvecchio, Louisiana and Tate Britain, museums which despite their conspicuous and meaningful differences, have a key feature in common: they exist to generate something new - new relations, new ideas, new encounter patterns. This is, we believe, what essentially differentiates them from the previously discussed cases which exist to *reproduce*. It should be noted here that, instead of considering the case studies as a group, we will deal with them as individual cases or in pairs. As it will be made clear, the reason for this is that, in contrast to the *long models* which tend to resemble one another, *short models* tend to individualization.

Let us begin with Louisiana, the museum which most obviously appears to concentrate the key spatial features of a *short model*: invisible architecture, asymmetric arrangement of galleries, variety in the morphology of spaces and their relations, strategic presence of the park. Interestingly, in certain of its spatial qualities Tate Britain resembles Louisiana - as, for instance, the ringy layout, the variety in spatial relations. Moreover, both museums, as seen earlier, optimize and structure randomised patterns of movement and exploration, at the global and the local level, and by implication, generate an emergent pattern of encounter.

But Louisiana has some additional features, which can be paralleled to the spatial structure of Castelvecchio. Both are concerned with accentuating unexpectedness, and surprise takes precedence over intelligibility. The layout - marked either by short axes or by long but not revealing lines of sight- can not be grasped as a whole from any central point; it requires the viewer to move around and experience it gradually, in an *asynchronous* way. To this contribute significantly the frequent changes of levels and shifts of direction that restrict the amount of information he receives and maximize the unpredictability of his experience (Hillier 2003, Shannon 1948).

Figure 7:

The unpredictability of the experience, a distinguishing feature of Louisiana (a, b) and Castelvecchio (c)

Perhaps more importantly, the sense of exploration is followed at the level of the display. Castelvecchio and Louisiana adopt a *visual* arrangement of objects that privileges visual links and aesthetic juxtapositions; in comparison with the *chronological* and mainly the *conceptual* arrangements discussed earlier, it is the most exploratory intellectually, since it gives the intellectual control to the viewer: the curator puts things that look nice together –and in this sense he prioritises space as an independent variable-, but it is the visitor's task

to reconstruct the story semantically. In complete contrast to the *long model* museums discussed above, here the arrangement of objects mean nothing else than the objects themselves (cf. *non-correspondence* relation).

It could therefore be argued that Louisiana and Tate Britain make people explore and this applies to the informational as well as the social programme, while at Castelvecchio, space does not act to structure *social meaning* (or *relations*) -as in the above cases-, but it does contribute to the creation of *spatial meaning.* This point to the most fundamental distinction between *long* and *short model* museums. Rather than *reflecting* a specific meaning, the intent (if there is any) is to *create* fields of possible meaning. After all, meaning does not exist in advance, but is created and exists by virtue of the existence of the specific museum (Hillier 2004). Furthermore, instead of placing the emphasis on the conceptual structure and the functional ends, priority is given to the spatial structure and the architectural/spatial means; and the spatial means is the basis of the aesthetics of space, which is the complete opposite of the didactic (Hillier 1996).

This distinction enables us to propose a possible insight to the thought initially suggested, that the influence of space on the display can extend as distinct from and beyond the *discursive* dimension of the experience of exhibits. It seems to us that, when a richer spatial structure is produced by the effects of the synthesis of spatial and display layout, the informational function of the museum extends beyond the didactic aims, and acts through its aesthetic quality. Moreover, when space is used in a more subtle way, the experience of space itself is rendered more complex and information rich.

Conclusion

In conclusion, it should be noted that this conceptual model is proposed as a *way of thinking*, as a method for reading museum space as a set of formal potentials, built out of a number of basic concepts. In that sense it might be suggested that these ideas could be a valuable contribution to the design of museums in that they provide designers with a better understanding of principles and some knowledge of systematic consequences of strategic design decisions. More importantly perhaps, they can also inform the application of new ideas, and encourage new ways of handling spatial and display considerations.

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i. According to Ph. Johnson, 'the art of exhibiting is a branch of architecture and should be practiced as such' (1931 cited Johnson 1979, p. 49).

ii. The observation study entailed systematic representations of visitors' movement and space use patterns, and was based on the following, common observation techniques: movement traces and 'gate' counts, suitable for investigating patterns of movement and exploration, and static snapshots, for patterns of viewing and encounter.

iii. For the comparative study of the two museums see Tzortzi, K. 2004. Building and exhibition layout: Sainsbury Wing compared with Castelvecchio. Architecture Research Quarterly, 8 (2): 128–40.

iv. It should be noted that the Pompidou consists of two quite different floor plans (to which we will refer as Pompidou4 and Pompidou5), while Tate Modern repeats, with slight differences, the same plan on both floors (Tate3 and Tate5).

v. For a fuller discussion see Tzortzi, K. 2005. Kröller-Müller vs Louisiana: alternative explorations of museum experience. In Proceedings of the Fifth International Space Syntax Symposium, Delft, p.205-217.

vi. A d-space is more than two-connected and lies on more than one ring. For the four topological types see Hillier 1996, chapter 8.

vii. The syntactic concept of synchrony refers to the scale of a space, and is juxtaposed to description, which refers to the whole embedding of the space in its context (see Hillier and Hanson 1984, p.93; Hillier 1996, p.232).

viii. At Kröller-Müller the constraints imposed on the spatial design (i.e. sequencing, visual insulation from the outside), required by the realization in space of a specific message (H. Kröller' s theory of art) separate and insulate, rather than create the conditions for encounter.

ix. At Louisiana, the exhibition set up, with a minimum of rules restricting the viewing order (self-contained displays that accentuate visual links between works), does not impose a deliberate sequence to the pattern of exploration and by implication, encourages encounter density.

x. A variation of this strategy is encountered at Kröller-Müller. The highlights of the collection are not placed at the deepest spaces of the building (as in the Sainsbury Wing) nor at the shallowest galleries (as in Pompidou5), but at the centre of the composition, privileged by the spatial design: a highly integrated and controlling space and a compulsory passage in the layout.

xi. This argument draws on a number of syntactic articles that established the distinction between strong and weak program buildings (or long and short models). See for instance Hillier et al. 1984; Hillier and Hanson 1984; Hillier 1996; Peponis and Wineman 2002.

xii. Order is defined here as the property of being made up of similar parts is similar relations (see Hillier 1996, p.235).

xiii. At Tate Modern works are organized in an ahistoric arrangement and related by conceptual themes. At Kröller-Müller, the opposite and identical side galleries express the contrasting juxtaposition of 'realism' and 'idealism' , according to the founder's view of art, while the heart of the building accommodates the works of the artist, namely van Gogh, that represent the culmination of the above two movements.

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