

An approach of the microstructure of the gallery space: The case of the Sainsbury Wing

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Abstract

The aim of this paper is largely exploratory. The intention is to contribute to the description and understanding of the intricate pattern of interdependencies between the two parameters of the gallery space, the spatial configuration and the exhibition layout. This paper reports the analysis of the Sainsbury Wing, the extension to the National Gallery London. Firstly, the paper explores the pattern of spatial organisation of the gallery and identifies curiosities due, among other things, to a graph problem. Secondly, it demonstrates that the strongly localised movement is explained by the syntactic patterns of depth and connectivity. Thirdly, it analyses the conceptual strategy of the arrangement of paintings to favour thematic or aesthetic relationships rather than promoting the uniqueness of the work of art. The conclusion is that on one hand, the layout of the display uses the spatial potentials to maximise the impact of exhibits and, on the other hand, the power of space overrides the intentions of the curators when it comes to the morphology of movement and exploration.

Keywords

Gallery layout,
display, axially,
visibility,
perspective,
movement,
exploration, graph

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1. Introduction

Much emphasis has recently been placed on the architecture of the museum in terms of its shell. This paper will examine its micro-scale, the microstructure of the gallery space and aim to investigate the intimate relationship between the way in which objects are laid out in space with the design of space and the patterns of space use. More specifically, this paper addresses the issue of the arrangement of objects in relation to:

- a. the spatial qualities of the gallery's layout, and explores how the exhibition design can use and exploit the structure of space in order to enhance the impact of objects.
- b. the patterns of movement, both global and local; in other words, from the manipulation of circulation to the orbits of the moving observer.
- c. the construction of the route, and by implication, the rhythm of perception and the viewer's exploration and exposure to information.

The case study chosen is the Sainsbury Wing, the National Gallery Extension, built by Venturi, Rausch and Scott Braun, 1986-1991. The Sainsbury Wing

constitutes an interesting case, as the spatial structure of the gallery is closely connected to its visual organisation, and the configurational properties of the layout are enhanced by the organisation of the display. It is of some interest to note that the design of the galleries and their layout, and the planning of the display were developed together.¹ What makes the study of the Sainsbury Wing even more intriguing is the fact that “*the galleries are permanently designed*” for the early Renaissance collection of the National Gallery² and “*the arrangement of pictures by room will be fixed*”.³

2. The National Gallery’s requirements and Venturi’s design rationale

We believe that the gallery layout must be examined in the light of the National Gallery’s Design Brief. So, the first step is to make a brief reference to the principal requirements. The Design Brief (February 1985)⁴ focused on the fact that “*the new galleries would provide a permanent home for these paintings and bring together both Northern and Italian paintings as a coherent display*”. It also required “*a clear and easily comprehensible layout*”. For this reason, “*a broadly rectilinear arrangement of spaces was called for, with clear distinctions between different spaces, as an aid to orientation*”. Also, fundamental was the idea that the “*new galleries should consist of rooms, having a substantial character and an air of permanence*”.

At this point it would be of interest to juxtapose some comments of the curators on the principal requirements.⁵ In regard to the sequence and the manner in which the paintings should be displayed, they argue that “*while rooms should be created... these rooms might well be best thought of as being interlocking spaces*” and, most importantly, that “*the doors should not be centrally disposed*”. They also suggest a configuration that allows the spatialisation of geographical and chronological relationships.⁶

The main characteristics of the gallery are also given by Venturi in his design rationale:⁷ he feels that his approach, by “*allowing some flexibility and yet suggesting an abstraction, an elemental expression of the context*”, lies between the two traditions in the display of paintings, the one providing an architectural context analogous stylistically with the period of the paintings, and the other creating neutral and flexible spaces. “*For the National Gallery to suit the character of its Renaissance collection, we propose*”, he said, “*returning to the earlier tradition. Galleries, that are rooms defined by familiar, traditional walls, floors, ceilings, doors and windows will, we feel, be more appropriate for exhibiting Renaissance paintings....*”. He pointed out that “*the aim of our design is to promote a sense of place, but not to intrude on the paintings*”.

3. The spatial properties of the layout

Let us now explore in detail the pattern of spatial organisation and the spatial qualities of the layout (Figure 1). On the whole, the gallery layout is rectilinear, symmetrically ordered and based on a network of axes of visibility and access.



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Figure 1. Sainsbury Wing - Gallery level plan, showing the locations of key paintings.

3.1 Axiality and the question of perspective

The key structural property of the layout is the powerful axiality. The whole structure is created by two intersecting major axes: a cross perspective axis, which is a continuation of the central axis of the main building, and penetrates the whole length of the extension; and another, vertical axis which crosses the central enfilade of rooms and runs across the whole width of the extension. Thus, the two major axes provide information which reaches the periphery of the plan.

The cross axis cuts the vertical axis at a diagonal, because the dominant north-south axis of the Sainsbury Wing was shifted to the west with respect to the orientation of the main building. This axial shift allowed the creation of the central enfilade of the northernmost rooms of the extension which aligns with the central enfilade of the existing building. Thus, the new wing follows the precedent of the old galleries while at the same time the axial disjunction makes the transition felt. Secondary smaller axes, usually at right angles to the major ones, cross the spaces that do not already lie on one of the main axes.

Closely connected to the issue of axiality, the question of perspective is used in very deliberate ways in the gallery. It may also imply the preoccupation of Renaissance with this technique. The cross axis which links the two buildings creates a false perspective and a visual play with the perspective construction of the painting placed at the end of the vista. At the top of the staircase, the entry has the proportions of an early Renaissance, Brunelleschian opening; to the left, extends a vista, through

arched openings, diminishing in size, into the northernmost rooms and terminates in Cima's large altarpiece of *The Incredulity of Saint Thomas*. This diminishing perspective gives an impression of increased distance and seems to continue in the painting of the coffered ceiling the same diminishing perspective.

The central enfilade makes also use of the perspective. The broad semi-circular arched openings, already seen in the cross axis, are also used to this north-south axis, so as to emphasise its importance. Its long vista terminates at each end by an altarpiece: Raphael's *The Crucified Christ* on the north end wall, and Pollaiuoli's *The Martyrdom of San Sebastian* on the south.

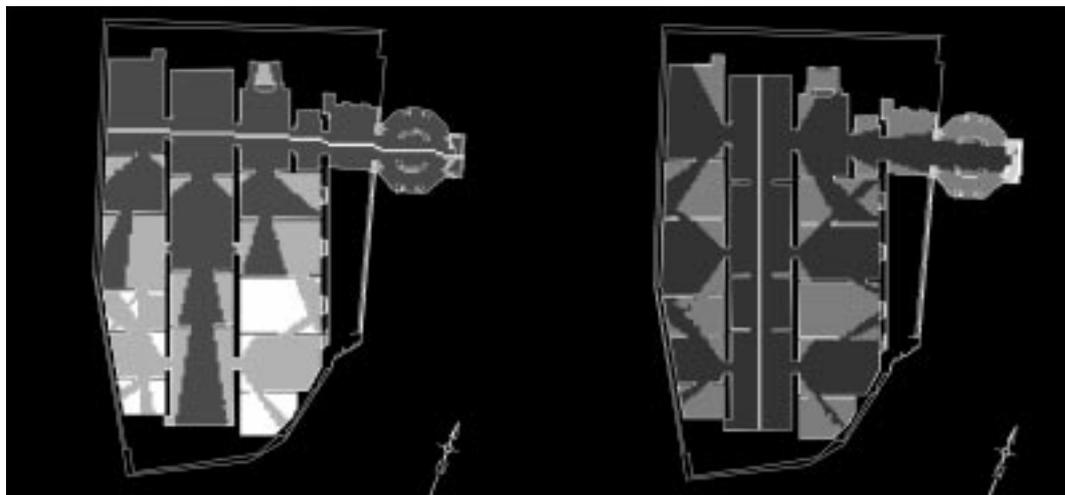
3.2 Hierarchy

Another dominant feature of the gallery is hierarchy, expressed both by the structure of space and the size of rooms. The sixteen galleries (plus the annex for the Leonardo cartoon), which constitute the Sainsbury Wing, are organised in three ranges of rooms running the length of the building from north to south. The range of the central galleries is made taller and wider than the flanking ones; it is created for the later Italian pictures, among which are a high proportion of large altarpieces. The side galleries are smaller rooms, with lower walls and ceilings, reserved for the smaller paintings, particularly the Netherlandish portraits and intimate devotional pictures. Their subordination to the central ones is emphasised by two devices: firstly, the side galleries are open to, in other words dependent on, the central enfilade; secondly, they take up the angles of the site boundary. Furthermore, the four rooms that constitute the central range are linked by broad arched openings in enfilade. In contrast, the linking doors in the side galleries are not aligned, creating thus an informal note, an interesting play. In conclusion, the design of the three ranges recalls the layout of a tripartite church, an ecclesiastic symbolism which emphasises the religious character of the works displayed.

3.3 Open spatial relationships and synchronic visibility

Though it seems that we have to do with conventional rooms, and not with a free-flowing space, the open spatial relationships of the well-defined rooms create a sense of unity and flow, a succession of visual relationships, which is usually the characteristic of open spaces. The wide door openings and their axial or staggered alignment, allow a distant and synchronic visibility, shape powerful isovists and define a determinant feature of the gallery. The majority of visual fields are not restricted to the local scale of a single space; they enter up to six rooms. More importantly, there is a visual access to the entire length and width of the gallery as one moves along the major perspective axis (Figure 2a); in addition, a simultaneous synchronisation of the spaces of the two sides is provided to the visitor moving

through the central aisle (Figure 2b); finally, along the shorter axes of the each side, visual information is revealed sequentially, and each position offers fragment of visual information that was offered before, on what one sees through.



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Figure 2. Line isovist from: (a) the perspective axis; (b) the main vertical axis.

The visual play is enhanced by the fact that the collection numbers a high proportion of small size paintings and subsequently, the changes in the visitor's views are radical: he does not change views of partially visible paintings, but entire works become visible or disappear from his field of vision. Only in the main axis are the paintings of big scale. But the wide and tall arched openings of the central aisle, viewed in perspective, allow paintings in different rooms to be seen together. Finally, the powerful visibility, key property of the Sainsbury Wing, can be said to counteract the lack of spatial variety and differentiation⁸ that would engage the visitor.

4. How is the Sainsbury Wing working now?

The analysis will now move from the more conspicuous spatial properties of the gallery to the less obvious ones which explain how the Sainsbury Wing works. It would be useful to begin by reviewing two issues that are of direct relevance to our study: firstly, the Brief's focus on circulation as a key element of the layout and secondly, the architect's intention to create a hierarchy among the spaces. More precisely, the National Gallery's Design Brief for the Hampton Site Extension, required a "*well defined main route through the galleries*".⁹ Already the Preliminary Outline demanded that "*visitors should feel instinctively what the layout of the Extension is. We want to avoid*", it is said, "*the danger of visitors by-passing rooms because they are out of the way or appear to be in a cul-de-sac. No gallery should be missed because it is out of the normal flow. Visitors must be able to know easily where they are*".

Venturi put the emphasis on the centre of the new wing; he designed a 'basilica' style layout which enhances the predominance of the central space. This series of the axially aligned longest and highest spaces of the gallery, was planned to play the role of "a public processional space".¹⁰

4.1 The circulation pattern and the hamiltonian path

In dealing with this question, we carried out an observation study that involved recording the routes of 100 people through the galleries, and counting flows in both directions across the thresholds of spaces.¹¹ As regards the use of the two entrances, it seems natural that 23% of visitors enter from the Sainsbury Wing, which was designed as a secondary entrance.¹² That implies that the 77% of visitors who use the main entrance, start their visit from the old building, and thus, the Sainsbury Wing becomes the dead end part of the whole complex.¹³ Furthermore, it has been shown that 45% of people observed turn left and start their visit from the east side, as proposed by the museum, and 50% move along the perspective axis, attracted by the visual strength of the picture at the end of the long vista. At the end of their visit, 42% of the people observed get to more than thirteen spaces (out of the seventeen that constitute the gallery), 26% get to more than nine spaces and 6% get to only one space. This space is either room 60 (as people move along the main link between the existing building and the new wing, they get to this room to build up a picture of the gallery space), or the annex for the Leonardo cartoon. In this case, visitors come specifically to look at that work.

At this point two observations are in order:

- visitors start moving rationally and then get confused, move randomly, returning to the same spaces or missing parts of the gallery.
- the spaces that seem to lie outside the search track of visitors are those of the central sequence.

Let us discuss the first point further. People enter the gallery from the corner, the common point at which both the staircase from the entrance and the link from the main building arrive. Upon entering the first room (51), visitors grasp the whole picture of the convex space, its length and width. They have then the choice between the long perspective axis, which ends at Cima's work in room 61, and the slightly shorter axis that stops at the great altarpiece of *The Coronation of the Virgin* by di Cione in room 53. Having an innate sense of direction, most visitors turn left and move through the rooms of the east side, following the alignment, or go right to the end of the perspective axis, and then follow the next axis, down to room 66. Few turn to the central enfilade, as it is unlikely that they will start their visit from the middle of the gallery space.

Up to that point people move in a rationale way, following the lines and the corners of the gallery. The difficulty lies in deciding the continuation of their itinerary when they find themselves at the south end of the central axis. Moving along the main axis seems to take them back home to the original starting point too quickly, while there are more things to explore on the other side of the axis; so, they continue linearly to the other corner of the gallery, and do not get to the central rooms. So beyond that point, visitors get puzzled, lose their sense of orientation and move randomly and inconsistently. Some return to the same spaces or move in a non systematic way; the majority of them continues through the west sequence of rooms and finds the way out through the main perspective axis.

Now if we compare the three sequences we find that the complex of spaces on the east side has by far the highest movement rates (the sum of movement per minute in the 7 east rooms is 102.15 - Figure 3a). It is surprising that the axis gets only the one fourth of movement (53.8 per minute) while the east side takes the two. Even the west sequence has slightly higher movement rates than the central one (59.7 per minute).

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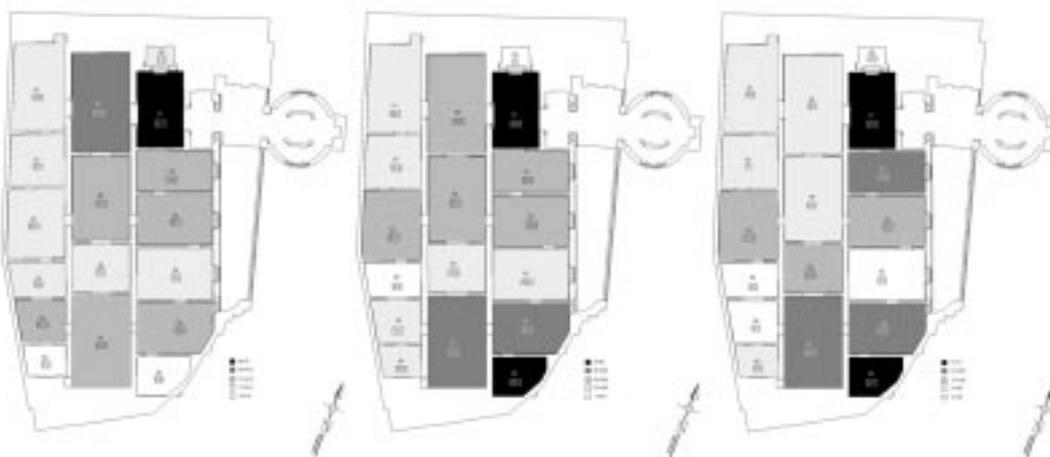


Figure 3. Visitors in the Sainsbury Wing- : the scale from light (low) to dark (high) grey indicates the average: (a) movement rates, (b) total occupancy rates, (c) viewing rates (per minute) of each space.

In what follows it will be proposed that the current pattern of space use can be explained by the deep “core” structure of the gallery and its simplified, but not intelligible, layout. In the Sainsbury Wing there is no link between the entrance and the intelligibility of the gallery. The main vertical axis, designed to draw people through and enhance a sense of ceremony and procession, has no connection with the staircase or the entrance. In other words, the deep core of the gallery does not connect to the global circulation, to the whole movement pattern of the system. Therefore, the local aspect of movement is independent from the global one. More than that, the main vertical axis, the intended circulation spine of the gallery, can not act as an organising axis, as it is not adequately integrated into the gallery as a

whole, and it gives little guidance as to the overall structure of the layout. Also, it has no connection with the beginning of the route, as it starts from the second space of the gallery. Thus, the Sainsbury Wing lacks clarity of structure from the point of view of the visitor entering the entrance to the gallery. Moreover, its simplistic structure does not create local problems, but on the contrary, it affects the whole layout and movement through.

Hillier suggested that this feature is related to a graph problem and plays a role in generating wayfinding problems. In Figure 4a we construct the node graph of the spaces in the gallery in order to capture the essential structure of the spatial relationships (the 1-connected spaces are evidently omitted). It becomes evident that if the visitor follows the proposed by the gallery route, he cannot end where he started. This property, which refers to the existence of a single path passing through all the spaces ending up where it started, is known as hamiltonian (Buckley and Harary, 1990: 79-89). It is clear that the Sainsbury Wing's graph is a non-hamiltonian graph: visitors cannot get to all spaces without crossing some of them more than once or missing out parts of the gallery –usually the central axis. However, it would be possible to make a single path by opening one more partition between space 58 and 64 (Figure 4b).

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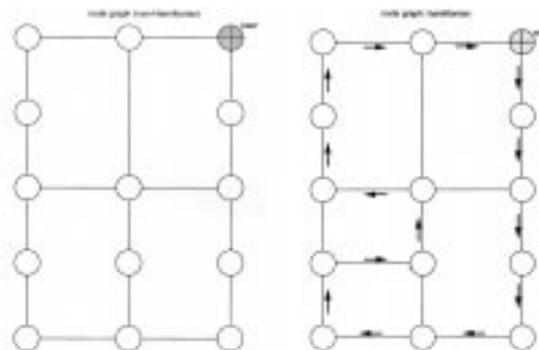


Figure 4. (a) The node graph of the gallery's layout and (b) the hamiltonian path (drawn by B.Hillier)

4.2 The pattern of exploration: simplicity vs. intelligibility

Fundamental in the original brief was the concept that “*there should be a choice of routes through the collection, enabling visitors to explore at will, rather than obliging them to follow a set route*”. It also demanded that “*one or more main routes should be identified, with other rooms offering short detours from these routes, returning the visitor to easily recognisable main spaces*”.

In the Sainsbury Wing there are no predetermined routes or rigid viewing sequence; people can choose their own circuit, as the rooms are interconnected and well linked axially, on terms of permeability as well as visibility. However it is surprising that there is no great differentiation of visitors' itineraries. 19% of the visitors observed follow exactly the same route: upon entering they turn left, then

they move along the east side (and they visit all its spaces or, often, omit room 56), they get to room 57 and use the southern cross axis to continue their visit to the west galleries, in other words from room 66 (or 65) to room 61; finally, the main vertical axis provides them with a clear way out. The routes of 100 visitors observed during their visit through the gallery, are shown in Figure 5.

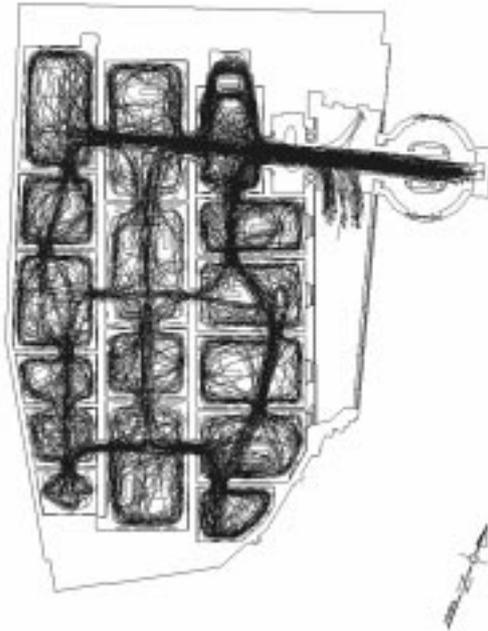


Figure 5. Walking through the Sainsbury Wing : the grey lines show the paths of 100 visitors observed during their visit through the gallery.

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The spatial properties of the layout do not encourage the explorative aspect of visitors' movement. On the contrary, the fact that people cannot grasp the overall structure of the gallery from the beginning, prevents them from self-exploration. Since they cannot decide on the route from the entrance, they continue their itinerary through the galleries and take the decisions at different stages as they move. The Sainsbury Wing is not an easily traversable gallery.

4.3 The pattern of space use: a spatial logic

If we now turn to the comparison between the dynamic description of the movement pattern and the static description of visitors (Figure 6), we find that on the whole, the correlation between movement and total occupancy rates¹⁴ (Figure 3b) is quite good ($r = .378$; Figure 7a). Also, both rates suggest that there is a bias toward the east side.¹⁵ The highest viewing rates (Figure 3c) are found in the first (51) and the last (56) space of the east sequence. This has to do with the curator's choice to display in the first room, not the earliest works as it would be expected by a chronological arrangement, but the pictures which constitute the culmination of the Renaissance art; and respectively, in the dead-end space, one of the key paintings of the collection, Van Eyck's *The Arnolfini Marriage*.

An interesting finding indicated a stronger preference for the east dead-end space rather than its west equivalent. We feel that the reason for entering more fre-

quently room 56 and avoiding room 66 is spatial. Both are cul-de-sac spaces at the end of the sequence, and not open onto the central space. In addition, room 66 is also devoted to the works of one of the most important Renaissance artists, Piero della Francesca. But room 56, being at the end of the alignment for visitors moving through the east sequence, attracts a substantial number of visitors, while the symmetrical cul-de-sac of the west sequence is against the alignment and thus people do not get to it.

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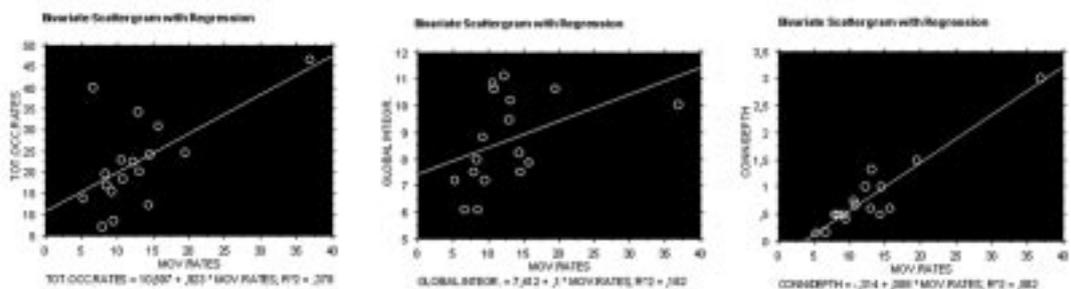
Figure 6. Static description of visitors in the Sainsbury Wing, based on 'instant snapshots'. (The dark grey dots represent sitting people, the light grey dots standing people, and the arrows moving people. Also, circles are drawn around talking groups.)



5. What makes the gallery work this way?

It is often argued that one part of movement is function of the configuration of the layout and the other is dependant upon the power of the attractors, in this case, the objects on display. The most frequently empirically tested theorem of space syntax, more integrated spaces are statistically associated with higher rates of movement, does not hold in the case of the Sainsbury Wing. If we correlate the numerical integration value of the rooms with the observed movement rates, we find that the correlation is not significant ($r = .182$; Figure 7b). Yet the syntactic properties have a powerful effect on the pattern of movement. The present study has identified a strong correlation between movement and the reciprocal of depth multiplied by connectivity. The “scattergram” in Figure 7c shows that 88% of the differences in movement rates between spaces are due to the structure of the spatial layout. This result can perhaps be explained by the following argument.

Figure 7. Scattergrams plotting movement rates against: (a) total occupancy rates; (b) spatial integration; (c) connectivity/depth.



The fact that people move locally and cannot grasp the global structure from the entrance implies that local conditions have bigger effect on creating the pattern of movement in the Sainsbury Wing than the global layout. In conclusion, our finding is consistent with the idea that the Sainsbury Wing cannot be used in a clear way nor can it be easily traversed, as the navigation through the spaces requires an understanding of the way in which local parts are interrelated into a whole pattern.

6. Spatial arrangement of paintings¹⁶

6.1 Spatial sequence

Having explored one parameter of the gallery space, its spatial configuration, we now move to the second one, the display layout.

“The aim of the arrangement of the collection is to create spaces for the paintings, so that they can be seen in a broadly chronological sequence, with contemporaneous paintings from different geographical locations being shown in rooms of close proximity.” This statement from the original Brief is, we believe, shaped in the spatial layout of the galleries. The paintings, chronologically ordered, are displayed in a sequence of spaces to reveal common characteristics, related compositions and themes. As discussed earlier, this sequence is not rigid. The availability of loops in the circulation permits visitors to short-cut the main sequence and move easily from one space to the other.

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The visitor’s steps through the space correspond to the idea of retracing successive stages of the artistic production in Europe during the period 1260-1510; the sequence in space implies the sequence in time. This logic of display emerged in the curators’ initial comments on the layout: they required that *“the display should have rooms side by side. The public should be aware that moving straight on means a move forward in time; a move to the side means a move to a different geographical region at roughly the same time. Some way of allowing the visitor to see into the adjacent rooms might be good, thus presenting the visitor with a greater sense of direction”*.

Suppose we travel along the path as proposed by the gallery. We enter room 51. This is the only entry point of the display. It serves as an introduction, though it is devoted to works of the end of the 15th century which constitute the culmination of the Renaissance art. So the chronological narrative starts from room 52. Rooms 52 to 54 show Italian works of devotional character. Italian paintings with domestic character are displayed in room 55. A cul-de-sac room, specially designed for the paintings it houses, small early Netherlandish paintings, is room 56. The works displayed in the four central rooms have common chronological and geographical

frame: later Italian paintings. In contrast, the west sequence starts with Italian artists (rooms 61-62) and continues with Northern works (rooms 63-65). The equivalent of the east cul-de-sac room (56) is room 66, the dead-end space of the west side. It was designed as the culmination of the west suite of rooms, so that visitors “would be encouraged to sit”.¹⁷ It should be noted that these two dead-end spaces, 56 and 66, are also distinctive in the sense that the geographical/chronological sequence stops provisionally at these points: the east side, devoted to the Italian works, ends with Netherlandish paintings, and respectively, on the west side, the Northern rooms (63-65) terminate with Piero della Francesca.

We feel that the enfilade of rooms, though impregnated with modern elements, follows the traditional concept of the narrative: the visitor is considered as a peripatetic being who gathers information from accumulative juxtapositions of paintings rather than of the contemplation of a single work. The arrangement does not promote the uniqueness of the work; the emphasis is placed on relationships.

6.2 Spatial mannerism

The argument proposed is that the tools which allow the spatialisation of this message are provided by the key properties of the gallery’s configuration. The powerful axiality and the synchronic visibility become the spatial tools that serve the placement of paintings in strategic positions at the end of long lines of sight or in the deepest spaces of the complex. Paintings with great visual strength, such as Cima’s *The Incredulity of Saint Thomas*, Pollaiuoli’s *The Martyrdom of San Sebastian* and Raphael’s *The Crucified Christ* receive special axial treatment and are used as “attractors”. They occupy conspicuous locations, at the end of vistas, and can be seen from distance and at a right angle. The perception of works from the right reference point is important, especially in the case of Renaissance paintings that establish eye contact with the viewer and seem to require his active presence.

It is of interest to note that the technique of axial vistas respects the scale of the paintings displayed. The axes on the side galleries are more fragmented, creating spaces of a more enclosed character. For example, Van Eyck’s *The Arnolfini Marriage*, with the small scale and detailed representation, is placed on the axis, but in a small cul-de-sac room that provides seclusion and containment, and is visually shielded.

In addition to the axial treatment, the spatial distribution is also determined by the scale and the character of paintings: “*These paintings are located here*”, wrote the Deputy Keeper, Michael Wilson, to the architect David Vaughan, “*because they would seem to be large and strong enough on the whole for the imposing central enfilade*”.¹⁸ The longest and highest galleries at the centre of the new wing, which show important Italian Renaissance paintings, were designed to become the “*central*

*focus of the layout*¹⁹, while the smaller galleries that parallel this sequence on the east and west side were conceived for the more intimate paintings. It follows that the hierarchy among the spaces, shaped by the arrangement of galleries and the placement of doorways between them, is coupled with the hierarchy in the arrangement of paintings.²⁰

Furthermore, the maximisation of axiality eliminates distancing effects, and in combination with the open spatial relationships, they allow for freedom and flexibility in expressing the relationships between artists. The works of an artist do not have to be restricted to one room. They are hung in adjacent rooms which are unified by wide openings. Visitors can move from one room to the other and come up with the same artist in different context. This also reflects the history of art in Europe in the 15th century, when artists travelled and influenced each other. The case of Bellini and Mantegna constitutes a good example. Their works are displayed in two rooms, 61 and 62, divided according to their character: public or private. In room 61 there are more devotional works, while in room 62 are shown pictures of domestic character. The logic that shapes the arrangement is aesthetic: school, and subjects within this school. Both artists have treated the same theme, *The Agony of the Garden*. So their works are shown in the same room (62), close to each other, though divided by a picture placed in the middle, for reasons of symmetry. The viewer can step back and make comparisons, while at the same time getting glimpses of the other Bellinis in room 61.

The determinant property of the Sainsbury Wing is that it is all about glimpses and views from, through and into spaces to come or spaces just passed through. So the arrangement is built on vistas that punctuate the narrative. The overall sequence is characterised by powerful isovists and a succession of omni-directional and overlapping visual fields. The display is structured as a network of galleries whose door openings become the frames of visual compositions. It is no accident that the gallery is centred on the door rather than on the wall. The pictures in room 65 are eccentrically arranged on the west wall, so that the two southern paintings fill the viewer's field of vision from room 55. The same principle is applied in room 63: the bigger in scale painting is placed eccentrically to fit, both aesthetically and thematically²¹, the vista from room 53.

It is, therefore, tempting to consider that there is a spatial mannerism, in the sense that doorways are arranged diagonally to create a proliferation of visual connections, large and imposing paintings are placed as stops to long vistas, major works are put on the axis of the deepest spaces. This mannerism aims to make visitors move from one space to the other, *“to draw people through and persuade*

*them to linger (in the deepest spaces) rather than rushing through*²²; but we recall that the foregoing presentation demonstrated that the pattern of movement works in a different way than planned.

This technique of intentional vistas and axes that reinforce each other suggests a theatrical idea, a dramatic organisation of the display. It aims to create a visual effect and thus induce movement, rather than implying the original setting of the paintings. Seen from distance, Cima's and Pollaiuoli's works with perspective construction and centrality of composition, work well visually. But originally they were not placed in so conspicuous locations; on the contrary, they were seen in more intimate places, hung on the side walls of chapels.

6.3 Spatial character of the itinerary

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As we discussed above, the gallery is chiefly designed in the Beaux-Arts conception of circulation, and the spatial arrangement allows for thematic or aesthetic relationships between works. The intention is to create a unified and coherent spatial experience, to build up a picture of the artistic production of this period. The importance of the whole collection seems to override the value of the individual work of art. On the whole, the formally organised layout, emphasises the public aspect of visit rather than encouraging a more private appreciation of the paintings, an intimate relation with the exhibits.

Reference to circulation brings us to our last comment, the elimination of the sense of self-exploration, as surprises are already set up for the viewer. For instance, for the visitor who is moving through the central spaces, on the axis of symmetry, the presence of pictures remains invariant, eliminating any sense of uncertainty or surprise; what the visitor sees does not change as he arrives in the second room and then proceeds beyond it. The single long "tunnel" isovist which strikes the paintings at both ends at a right angle, designed to separate the viewer from the moment he will be able to appreciate it, and thus intensify his anticipation for the moment of confrontation with the work, produces the opposite effect: the key painting becomes a "negative attractor". The fact that the central sequence is omitted from the majority of visitors' itinerary may be also due to this.

Moreover, the repetitive perspective vistas through spaces deprive the visitor of any sense of discovery while, at the same time, providing a rush of information changing quickly as he moves around. The spatial experience of the itinerary becomes deterministic in the sense that there is a repetitive and symmetrical pattern of visual exposure. In other words, though the sequence is not strong and rigid, the spatial experience accommodates little probability and a great deal of repetition and certainty.

We hope this paper has illustrated Philip Johnson's observation that "*the art of exhibiting is a branch of architecture and should be practised as such*" (Johnson, 1974: 49). We aspire to explore it further, expanding the analysis to a variable sample of galleries, offering new insights and questions.

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Notes

¹ This paper involved investigating the National Gallery Archive and in particular, the rich correspondence with the Director N. MacGregor, the Project Manager E. Gabriel, the Deputy Keeper M. Wilson, and Venturi, Rausch and Scott Braun and Architects, dating from January 1986 to May 1991 (National Gallery Archive, HSI. 39). It mainly concerns adjustments to the gallery layout, comments on interior elevations, room sizes, proportions of doorways and door positions.

² The early Renaissance collection comprises mostly Northern and Italian works produced between 1260 and 1510. The galleries were specially created for this collection for two reasons: firstly, it was the least well served by the existing galleries, and secondly, it was not expected to grow appreciably in the future.

³ Comments on gallery plan and Venturi scheme 2, 28 May 1986, National Gallery Archive, HSI. 39.

⁴ National Gallery Archive, HSI. 69.

⁵ National Gallery Archive, NG 16/115.8.

⁶ See below, section 6.1

⁷ Venturi, Rausch and Scott Braun, A proposed extension of the National Gallery, January 17, 1986, National Gallery Archive, HSI. 71.

⁸ It is important to note that the Brief suggests that "while it is felt that the treatment of the interiors should be unified and help to identify the early Renaissance galleries as a coherent group, some variation would be welcomed, particularly where it would help to distinguish between different groups of paintings (for example, between Northern and Italian)".

⁹ The National Gallery Extension Brief, 21.2.1986, National Gallery Archive, HSI. 69.

¹⁰ Comments on Gallery Plan and Venturi Scheme 2, National Gallery Archive, HSI. 39.

¹¹ The observation study was carried out on four weekdays and four weekend days, in October-December 2002.

¹² A Preliminary Outline of the National Gallery's Design Brief for the Hampton Site Extension, National Gallery Archive, NG 16/115.8.

¹³ These numbers were tested against the results of the National Gallery's Visitor Survey carried out in 1993. The latter showed that 25% of visitors use the Sainsbury Wing entrance, while 69%, the Trafalgar Square entrance.

¹⁴ The term "total occupancy rates" includes all the static activities, in other words, people standing, sitting and moving in each room at any moment in time, while the term "viewing rates" refers only to the number of people standing and looking at works.

¹⁵ The sum of viewing rates in the rooms of the east side is 86.6 per minute, while 42.3 per minute, in the central rooms and 43.2, in the west.

¹⁶ The initial arrangement of 1991 has been rethought, in the light of new research on the collection (i.e. a work of Cimabue has been rediscovered) and as a result of new acquisitions (three early Italian paintings have been lately acquired). So, this paper will discuss the rehang of the collection in July 2001.

¹⁷ Letter of the 5 September 1986, National Gallery Archive, HSI. 39.

¹⁸ See note 17.

¹⁹ The National Gallery Extension Brief, 21.2.1986, National Gallery Archive, HSI. 69.

²⁰ The hierarchy is intensified by the display itself: the centre-line alignment of pictures is the dominant

principle. Their spatial arrangement aims to create aesthetically balanced groups and a pleasantly harmonious visual composition. Big scale paintings are placed in the middle, framed by symmetrically arranged pictures of diminishing size.

²¹ At both ends of the cross axis linking the rooms 53 and 63, the vista aligns the *Wilton Diptych* and David's *Virgin and Child*: both works represent the same theme, the Virgin with Child and Saints.

²² National Gallery Archive, Comments on gallery plan and Venturi scheme 2, 23 May 1986, National Gallery Archive, HSI. 39.

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