# Reading museums

## Kali Tzortzi

Assistant Professor in Museology, University of Patras, Greece

**Abstract:** The paper takes as starting point the idea that museums, like libraries, can be thought of as 'maps of knowledge', which order things in space according to some abstract scheme and where movement acquires a conceptual dimension. Through the study of three museums, it proposes an analytic methodology that helps us to clarify how the arrangement of objects can both reflect knowledge, reinforcing current understanding, and generate a sense of knowledge that is non-discursive, potentially reordering understanding. Borrowing key concepts from the mathematical theory of communication, the paper shows how *predictability* and *unexpectedness* are created through space and display design, by balancing structure and randomness, and how they affect the exploration of the museum and the reading of the display by visitors. It ends by raising the question if this contrast in museums can be theoretically related to the debates about browsing exploration in libraries and the concept of *serendipity*.
**Keywords:** museums, libraries, methodology, movement, text, browsing, serendipity, mathematical theory of communication

## 1. Introduction

Museums, like libraries, are places of knowledge. Both order things in space according to some abstract scheme, and through this, both can be thought of as '*maps of knowledge*' (Markus and Cameron, 2002; Whitehead, 2009), in which movement in space acquires a conceptual dimension. Both are described  as retrieval-based '*information systems*' (Buckland, 1991: xiv,35-36; Latham, 2012) and are organized to facilitate the acquisition of knowledge. But distinctively museums often aim to transmit a scientific or cultural message of some kind, rather than knowledge potentially related to individual reasearch (Basso Peressut, 2012: 41). From this derives the idea of the museum as 'a text to be read' (Hooper-Greenhill, 1992; Ravelli, 2006), working like a 'language' (Bal, 1996; Davallon, 1999) in the sense that the curator selects an object, like a word in a dictionary, and this then, by being integrated into the exhibition, changes status, becomes part of a whole and is given meaning. Through spatial

and conceptual relations, objects that are put together can reflect knowledge, in the sense of expressing established theories, or can seek to create knowledge by suggesting new ways of seeing the objects.

The aim of this paper is to propose a methodology that helps us to clarify this dual function. It involves studying visitors' movement, since the route through the exhibition becomes a discourse, representing the development of the exhibition argument. Through case studies we show how the layout of objects can become a 'text' that structures articulations between objects so as to represent pre-existing ideas, and so reinforcing current understanding. But we also show that there can be cases where objects are presented through a spatial arrangement that invites exploration and leads to responses which are embodied and perceptual, generating a sense of knowledge that is non-discursive, so potentially reordering understanding. To interpret this contrast, the paper uses key concepts from the mathematical theory of communication. It ends by raising the question if the contrast in museums can be theoretically related to browsing[1] exploration in libraries and the concept of *serendipity, 'often considered as a by-product of browsing'* (Foster and Ford, 2003: 323; also Rice, McCreadie and Chang, 2001: 182).

## 2. Methodology

The three museums that are used as case studies in this paper are displays of permanent art collections: the Kröller-Müller Museum, Otterlo (Netherlands), the Castelvecchio Museum, Verona (Italy), and the Musée national d'art moderne (fifth floor) in the Centre Pompidou, Paris. (For a detailed analysis of the three museums, see Tzortzi, 2015.) The first stage of the methodology (Table 1) is the descriptive analysis of the space layout of the three museums. On this basis, it is then possible to relate their spatial properties to the arrangement of objects: we record the location and arrangement of key works within the galleries so as to permit the analysis of the spatial organization of the collection as both a physical morphology and a conceptual structure. The last stage consists in analyzing the spatial behaviour of visitors: we observe the movement of visitors – randomly selected and spread across time periods – throughout their visit, record the morphology of their paths, and map the precise location and distribution of their stopping points. The aim is to understand how visitors explore the exhibition space and read the displays: are visitors' paths exhaustive or selective? Are viewing patterns closely linked to movement? And, more generally, does visitor behaviour vary with the individual visitor? Or is the layout of spaces and objects a critical factor in creating common patterns?

| Methodology | Kröller-Müller | Pompidou | Castelvecchio |
|---|---|---|---|
| Space layout | ordered, symmetrical, repetitive, predictable | structured, grid-like, with a rich network of connections between galleries, and cross-visibility | sequential, but locally complex, experienced gradually through non-revealing lines of sight |
| Display arrangement | *theoretical*, reflecting a specific message | *chronological*, with additional relationships between works mediated by visual links between galleries | *visual*, creating spatial, non-discursive meaning |
| Visitors' exploration | intensive viewing | heterogeneity of itineraries | complexity and exploratory nature of local paths |

**Table 1** The proposed methodology illustrating the key features of the studies

### 3. Description of space layout

The Kröller-Müller Museum is located in Holland's largest natural reserve, the Hoge Veluwe National Park, in Otterlo. It was created in 1938 by a collector, Helene Kröller, who, besides defining the character of the collection, was closely involved in the design of the building as a spatial expression of her concept of the museum and its didactic aims. It consists of two wings, with the original designed (and extended in 1958) by Henry van de Velde and housing the permanent collection: a rigid and hermetic building, the windowless galleries of which (with very few exceptions) sever the visitors from views outside, to promote an undistracted appreciation of art.

Looking at the layout, it is immedialy obvious that its key characteristics are geometrical order, axial structure, symmetry and repetition, making it easy to read and learn. The almost identical galleries arranged on both sides of the main axis give the latter a strong controlling effect. Their homogeneity also strengthens the centre of the building, with its cruciform layout, wrapped around an inner courtyard and pond, both with a similar, cruciform shape. The long main axes, their bi-lateral structure and the wide door openings create expansive visual fields, with symmetric shapes, which give a great deal of visual information and so reduce unexpectedness.

The fifth floor of the Centre Pompidou was redesigned in 1985 by Gae Aulenti and, although it might seem the opposite of the original 1977 open plan,

it retains the idea of the museum as an explorable urban space that characterized the design of the building by Renzo Piano and Richard Rogers.

The layout is organized around a long axis – often referred to as the *grande avenue* – running the length of the building, giving access to the galleries on both sides and providing many routes choices. Like in the case of Kröller-Müller, it is characterized by geometrical and spatial order – expressed by the repetitivity of spatial elements and relations – and marked by hierarchical organization, displayed both in the relations between the two complexes of spaces on either side, and in the relations between the galleries that are open to the axis and those that are in the deepest parts. So the main axis has here also a controlling function in terms of the organization of circulation, but by being linked to rings of spaces, it creates at the same time a structure that resembles that of the urban grid. This dense network of connections between galleries creates a dynamic sense of space: it offers to the moving visitor multidirectional and hetererogeneous visual fields linking two or three spaces and creating a local rhythm of perception, punctuated from time to time by powerful views to the city.

Castelvecchio is not a purpose-built museum, but a redesign by Carlo Scarpa in 1958–74 of a complex of historic buildings dating from different periods, within a medieval military castle by the river Adige, on the edge of Verona. It consists principly of the Reggia wing, the original fourteenth century residential building, and the Napoleonic wing, added on the two sides of the main courtyard in the nineteenth century. The museum is articulated into four spatial sequences, each on a different level, which Scarpa organizes into a continuous itinerary, by linking them through outdoor bridges, passages and staircases. These links create variations and discontinuities, provide pauses between the different parts, and give visitors visual reference to the surrounding space. This structure results in a unidirectional global pattern of movement, but the availability of local choices introduce a measure of flexibility and freedom into visitors' local itineraries, which increases as they progress deeper into the museum.

Castelvecchio shares both with Kröller-Müller and Pompidou, the theme of distant visibility, but with the difference that here the main axes do not offer revealing lines of sight. Visual fields are end-stopped by blank walls or anchored at one end by an element of outside space, or systematically restricted by objects laid out so as to maintain a sense of spatial uncertainty. Intriguingly, the layout in each of the four spatial sequences cannot be grasped as a whole from any point but requires the viewer to move around and experience it gradually, in an *asynchronous* way.

Combining the above arguments, it can be argued, that the simple and ordered plan of Kröller-Müller makes available possibilities of local choice within a pre-determined global direction, reinforced by internal visual continuity and visual isolation from the outside. The structured but complex layout of Pompidou shapes itineraries that are prescriptive, yet open. Instead of offering choice of galleries, as Kröller-Müller does, it provides choice of routes to galleries, which, in combination with the profusion of oblique views and

changing vistas, engages visitors both physically and intellectually. The apparently deterministic spatial structure of Castelvecchio imposes a predetermined global route and delays the final understanding of how the spatial sequences relate to each other, as the visitor winds her/his way through many locations, intervals and breaks, and explores the unexpectendess of parts previously unseen. But to understand how simple spatial progression can work in parallel with, or even in support of, the local complexities and constantly changing spatial experiences, we need, particularly in the case of Castelvecchio, to look at the arrangement of objects in space. It is to this, the display analysis, that we will turn next.

## 4. Display analysis

The collection of Kröller-Müller focuses on the second half of the nineteenth and the beginning of twentieth century and, with the exception of the highlight of the collection, the 273 works of Vincent van Gogh, it includes mainly works that translate thoughts and emotions into visual forms, and express a mental attitude. The aim is to illustrate Helene Kröller's theory of the development of art: that there are two movements in every period, which she called 'realism' and 'idealism'. The articulation of space supports the intended narrative structure: on the global scale, the two linear sequences of the museum correspond to a broad chronological division between nineteenth- and twentieth-century art. At the local scale, the symmetrically arranged and almost identical rooms along the axis echo Helene Kröller's intention to show that the two movements co-exist in every period of art, without '*taking sides*' (Oxenaar et al., 1989: 73, 95), and encourage comparative looking. But more importantly perhaps, the morphological differentiation of the central element of the layout stresses the importance of the oeuvre of van Gogh, which, according to her theory, cannot be classified as either realism or idealism, but represents the culmination of both, the '*realism of synthesis*'. Reflecting this, the centre is a controlling space, and a compulsory passage in the layout.

On the whole, the display is homogeneous, characterized by symmetric compositions and balanced groups, framed by the door openings, and with no focal points, so that the few exceptions that occur are meaningful. For example the installation of Helene Kröller's favourite painting, *Le chahut* by Georges Seurat, at the end of the first main view, freeze-frames the image for the moving visitor and enhances the impact of the work.

The display of the fifth floor of Pompidou is dedicated to the modern art section of the collection (from the early twentieth century to 1960s) and its organization follows the art-historical scheme of hanging by movements and artists in a chronological narrative. As in Kröller-Müller, the layout serves the spatial unfolding of the narrative, as each spatial unit brings together works which stand in close historical relationship to one another and constitutes an episode in the history of modern art. But, unlike Kröller-Müller, the highlights of the collection are not placed in the overall centre of the layout, but are consistently located in the shallowest galleries, in the spaces that are directly

open to the main circulation axis, and positioned in relation to the axes of the viewers' passage. The local hierarchy of access seems to correspond to the hierarchy of the works displayed.

More importantly perhaps, the axial oragnization of spaces, the rich network of connections and cross-visibility operate as a powerful means for mediating additional relationships between works and render the viewing sequence implicit rather than explicit. Looking at a specific object at Pompidou often means perceiving it against the background of different works and so discovering new relationships. The effect is that the spatial arrangement of works seems to counteract the inference that modern art evolved along a single path and suggest that it is a composition of both individual achievement and mutual influence between artists, movements and styles.

The collection at Castelvecchio – essentialy a local collection, consisting mainly of Veronese sculptures and paintings from the twelfth to the eighteenth centuries – is arranged broadly chronologically, but the emphasis is on the creation of local visual compositions. Interestingly, Scarpa acted both as architect and curator, as he was also responsible for the reorganization of the collection and its display, which has remained intact since its opening. Spatial relationships are created between statues, which are not placed axially, but off-centre, and deliberately facing in different directions. Arranged thus, they intensify the sense of visual depth in the enfilade of galleries. Paintings are also treated as three-dimensional objects, arranged in conjunction with the viewer's field of vision as she/he enters or leaves the room, or related to each other and encouraging visual comparisons.

A key principle of the display in Castelvecchio is that it discourages a static point of view. The viewer comes up to objects from behind, an unexpected arrangement that requires her/him to move around and among them, in order to face their front and capture the sense of the whole. '*I could have turned them …*', says Scarpa, '*but it seems that this is the visitor's duty ... to look to right and left ... come back to see it again, and walk around it*' (cited in Olsberg, Ranalli and Bedard, 1999: 14). This technique of display arrangement enhances the sense of movement within galleries, and leads to the microstructural ordering of space. The viewer is led step by step from one object to the other and the display seems to unfold as an aggregate of visual experiences, like shots in a montage sequence. In this way, the interaction of the moving observer with the work is maximized, and the time of viewing slowed down.

Looking at the three museums together, it could be said that, although in all the cases, objects are set in a more or less chronological framework, they differ profoundly in their underlying conceptual and spatial structure. In Kröller-Müller we have to do with a theoretical arrangement, in the sense that it reflects the development of a particular argument, the specific view of art of the founder. Space and display – or the *syntactic* and *semantic* aspects of the layout – point in the same direction in order to support each other. In Pompidou, over and above the underlying chronological order of the display, the multi-directional route choices and visual links which connect different parts of the exhibition space, suggest alternative groupings and encourage comparisons and

correspondences. So here space is systematically used both as a narrative device and as a means to mediate additional relationships between exhibits. Each visitor experiences the objects in an individual way, but perhaps without losing a sense of the history of modern art. If in these two cases, we have some degree of correpondence between conceptual and spatial structure, at Castelvecchio we have a *non-correspondence* relation. Castelvecchio adopts a visual arrangement, where the positioning of objects in space does not reflect a pre-given conceptual structure, but creates a meaning which derives from '*the specific arrangement of the objects in a particular exhibition setting*' (Peponis, 2007). So, instead of placing the emphasis on the conceptual structure, priority is given to direct experience and the perceptual.

### 5.  Visitors' exploration

With this as background, we can turn now to the observed behaviour of visitors (Figure 1). If we consider the space and display layout as expressing the
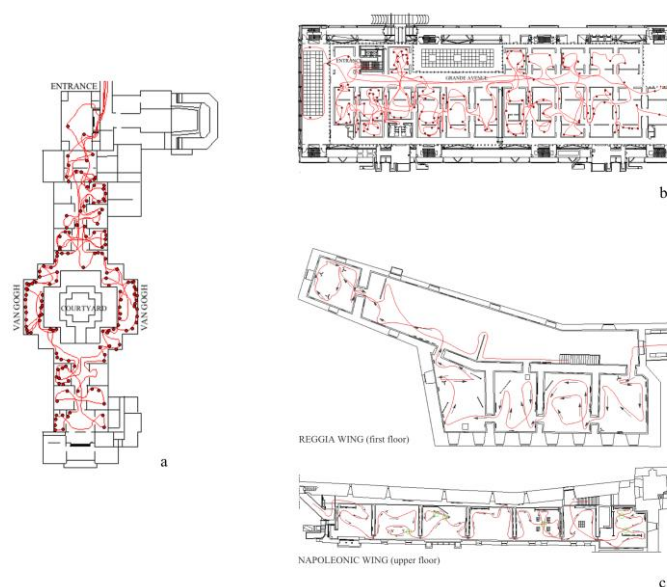


**Figure 1** An illustrative visitor path recorded on the plan of (a) Kröller-Müller Museum, (b) Pompidou and (c) Castelvecchio.

architectural and curatorial intent, and so being the *independent* variables, we can then see the spatial behaviour of visitors as the *dependent* variable. Or, if we return to the idea of the museum as map, designing and curating '*can be understood as a kind of mapping*', and  visitors' itineraries as their '*experiential remapping*' (Allen et al., 2014: 99), as '*a tracing of understanding*' (2014: 102).

Analyzing the observed exploration pattern in Kröller-Müller Museum, we find that only about a third of visitors tracked explore the display in the way it was intended to be read, as a juxtaposition of artistic movements accommodated in the opposed, symmetrically arranged galleries. In contrast, the fact that the spatial and display design prioritize the central space is clearly reflected in visitors' movement. All but one observed visitor traversed the space encircling the courtyard on their way in or out, though a small number (13 per cent) left the gallery after passing through the centre, having looked at the van Goghs. If we turn to the pattern of viewing, more than half of the total number of stops recorded are found in the ring of spaces around the courtyard. Perhaps it could be conjectured that the reputation of this key part of the collection precedes the museum visit and affects visitors' behaviour once inside. However, in spite of the focus on van Gogh, intensive viewing (as indicated by the exhaustive exploration of the galleries and the high rate of stops – both in absolute terms and in relation to the mean number of objects on display) is the key feature of the pattern of visitor behaviour at Kröller-Müller.

Turning to Pompidou, it is not surprising to find that each visitor follows an individual route, taking advantage of the dense network of connections. But, despite the heterogeneity of their itineraries, there is a strong tendency for visitors to get to the 'pre-determined' key spaces that structure the main route. More specifically, the spaces that are more visited tend to be those which are easily accessible in the layout as a whole, while spaces deep from the entrance and with weak visual links attract fewer visitors. At the same time, it is clear that the spaces with high viewing are also those with the key attractors. These parallel effects clearly reflect a curatorial strategy to place the highlights of the collection in striking positions, in the spaces that have more movement than others, so rendering them the most intensively occupied galleries of the museum.

Finally, at Castelvecchio the single general direction of movement is, as would be expected, reflected in visitors' paths. But what is particularly striking in the recorded paths is that the sequential movement between galleries shaped by the global layout is coupled with a high degree of non-linear movement locally, within the galleries. The distinctive arrangement of objects requires the viewer to shift positions and viewpoints, shaping intersecting and locally encircling orbits of movement that are not kept to the perimeter of the rooms but fill the space. So the simplicity of the global path is countered by the complexity and exploratory nature of the local.

## 6. Discussion

Looking back at our cases from the point of view of reflecting or creating knowledge through the arrangement of objects, it could be argued that Kröller-Müller illustrates most clearly the idea of the museum as 'a text to be read', reflecting a pre-existing theoretical argument. The introverted form of the building and the rigid configuration of the plan are adapted to support the specific message which is to be transmitted. But the other two cases point to two

different ways to create *unexpectedness* in the 'text', one through the arrangement of spaces (in the case of Pompidou) and the other to the arrangement of objects (in the case of Castelvecchio).

To interpret this, we will borrow from the mathematical theory of communication the idea that *information* is a quantity that can be measured; and the measure of the quantity is '*a function of the improbability of the received message*' (Moles, 1966: 19), that is of its *unexpectedness*. A message without *unexpectedness* would have more *predictability* but less *information*, and so be easy to understand, while a message with high *information* is more difficult to transmit successfully, because the rate of *information*, or *originality*, challenges our capacity for understanding.

If we transpose this idea to the layout of space and objects, we can argue that *information* in this sense is increased, in spatial terms, by the more randomized patterns allowed by the availability of route choices in the layout, and, in display terms, by an arrangement that has no rigid guiding theoretical programme behind it, and so allows some degree of *semantic randomness*, unaffected by *a priori* knowledge of the message by the viewer. The former case is illustrated by Pompidou where the grid-like layout that allows *spatial randomness,* encourages visitors to take different routes and consequently reorder the reading of the display, and so their understanding. A clear example of the latter case would be the *visual* arrangement of objects in Castelvecchio: the curator puts things together to suggest non-narrative, spatial meaning (Stavroulaki and Peponis, 2003), and so hands interpretative initiative to the viewer who is invited to reconstruct the story semantically and explore possible interpretations.

So if we accept the idea of information as relative to the degree of the *originality* of the message, we could argue that both Pompidou and Castelvecchio increase the degree of *unexpectedness* in the 'text' through different means, and thus expand the information content of what is presented. They propose fields of possible meaning beyond the discursive dimension of the experience of objects, including those transmitted by their embodied experience (for example, of moving among the statues), or by perceiving them within the spatial qualities of the museum (sequences, axes and views) that become part of its visual aesthetic.

## 7. Conclusion

Concluding, we have tried to show, through analysis, how *randomness* is created in the space and display design of museums, and how it affects the exploration of the exhibition space and the reading of the display by visitors. It is suggested that the acquisition of unexpected *information* might not be simply a fortuitous effect, but can be a consequence of design, and that a balance between *structure* and *randomness* can play a fundamental role in how we experience things, and how we acquire *information*.

In this sense, the analysis invites a comparison with libraries: in both cases we have to do with a structured field, spatially and semantically, which can be

explored, through moving in museums or browsing in libraries. In museums, introducing *randomness* in exploration creates conditions for alternative, perhaps unexpected, interpretations. Libraries, more than museums perhaps, '*entail personal constructions of surveys*' (Basso Peressut, 2012: 43), but browsing has also been related to '*serendipitous findings or creativity*' (see, for example, Toms, 2000; Rice, McCreadie and Chang, 2001: 174). More interestingly, in the library literature, a specific type of browsing has been proposed, '*serendipity browsing*', to describe '*undirected browsing (not goal-oriented): a purely random, unstructured and undirected activity*' (Rice, McCreadie and Chang, 2001: 179). It has also been found that spatial factors, such as visibility and accessibility, have been related to the use of displayed books by 'browsers' (Baker, 1986; O' Connor, 1998).

From these points of view, the relationship between *randomness* and *information* generates an intriguing question: how far can the analysis of museums have relevance to the current debates on *browsing exploration* and '*serendipitous experiences*' in libraries (for example, Toms 2000; Björneborn, 2008; Kirk, 2010; Massis, 2011; Carr, 2015)?

## Note

[1] For a detailed discussion of divergent perspectives on browsing, through the review of different literatures, including the library user studies, see Rice, McCreadie and Chang, 2001.

## References

Allen, J., Bak, J., Gauthier, D. and Whitehead, C. (2014). Seeing Yourself in the Museum. In: L.Basso Peressut, C.F. Colombo and G. Postiglione (eds.), *Museum Multiplicities: Field Actions and Research by Design* (pp. 95–113). Milan: Polytechnico di Milano.

Baker, S. L. (1986). The Display Phenomenon: An Exploration into Factors Causing the Increased Circulation of Displayed Books. *The Library Quarterly: Information, Community, Policy,* 56 (3): 237–257.

Bal, M. (1996). *Double Exposures: The Subject of Cultural Analysis*. Routledge, New York; London.

Basso Peressut, L. (2012). Envisioning 2st Century Museums for Transnational Societies. In L. Basso Peressut and C. Pozzi (eds.), *Museums in an Age of Migrations: Questions, Challenges, Perspectives* (pp. 19–54).Milan: Polytechnico di Milano.

Björneborn, L. (2008). Serendipity Dimensions and Users' Information Behaviour in the Physical Library Interface. *Information Research*, 13 (4). Access date 30.11.15. Available at: http://www.informationr.net/ir/13-4/paper370.html

Buckland, M. (1991). *Information and Information Systems*. Praeger, New York, NY.

Carr, P. (2015). Serendipity in the Stacks: Libraries, Information Architecture, and the Problems of Accidental Discovery. *College and Research Libraries*, 76 (6): 831-842.

Davallon, J. (1999). *L'Exposition à l'Œuvre. Stratégies de Communication et Médiation Symbolique*. L'Harmanttan, Paris.

Foster, A. and Ford, N. (2003). Serendipity and Information Seeking: An Empirical Study. *Journal of Documentation*, 59 (3): 321–340.

Hooper-Greenhill, E. (1992). *Museums and the Shaping of Knowledge*. Routledge, London.

Kim, B. (2012). Enabling the Research 'Flow' and Serendipity in Today's Digital Library Environment. *ACRLog*, [blog] 29 October. Access date 30.11.15.  Available at: http://acrlog.org/2012/10/29/enabling-the-research-flow-and-serendipity-in-todays-digital-library-environment/

Kirk, T. (2010). What Has Happened to Browsing Collections in Academic Libraries? *Library Issues*: *Briefings for Faculty and Administrators*, 30 (5). Access date 30.11.15. Available at:   http://www.libraryissues.com/sub/PDF3005May2010.pdf

Latham, K. F. (2012). Museum Object as Document, *Journal of Documentation*, 68 (1): 45–71.

Markus, A. T. and Cameron, D. (2002). *The Words Between the Spaces: Buildings and Language*. Routledge, London; New York.

Massis, B. E. (2011). "Serendipitous" Browsing versus Library Space. *New Library World*, 112 (3/4): 178–182.

Moles, A. A.  (1966). *Information Theory and Esthetic Perception*. London, Urbana, IL: Illinois University Press.

O'Connor, B (1988). Fostering Creativity: Enhancing the Browsing Environment. *International Journal of Information Management*, 8 (3): 203–210.

Olsberg, N., Ranalli, G. and Bedard, J.F., eds. (1999). *Carlo Scarpa, Architect: Intervening with History*. New York: Monacelli Press; Montréal, Quebec: Canadian Centre for Architecture.

Oxenaar, R.W.D., Hammacher, A.M., van der Wolk, J., van Kooten, T., Bremer, J. and Brouwer, M. (1989). *Kröller-Müller Museum, the First Hundred Years*. Haarlem: Joh.Enschedé en Zonen.

Peponis, J. (2007). Professor of Architecture. Georgia Tech. (Personal Communication, 19 July 2007).

Ravelli, L.J. (2006). *Museum Texts. Communication Frameworks*. Routledge, London; New York.

Rice, R.E., McCreadie, M.M. and Change, S.L. (2001). *Accessing and Browsing Information and Communication*. MIT Press, Cambridge, MA.

Stavroulaki, G. and Peponis, J. (2003). The Spatial Construction of Seeing at Castelvecchio. In J. Hanson (ed.), *Proceedings of the Fourth International Space Syntax Symposium*. London, 17–19 June. London: University College London, 66.1–66.14

Toms, E.G. (2000). Serendipitous Information Retrieval. *DELOS Workshop: Information Seeking, Searching and Querying in Digital Libraries*. Access date 30.11.15.
Available at: http://www.ercim.eu/publication/ws-proceedings/DelNoe01/3_Toms.pdf

Tzortzi, K. (2015). *Museum Space: Where Architecture Meets Museology*. Farnham: Ashgate.

Whitehead, C. (2009). *Museums and the Construction of Disciplines: Art and Archaeology in Nineteenth-Century Britain*. Duckworth, London