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**Museum and Exhibition Design  
in the Digital Age**

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and Innovative Processes in Architecture**

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Dr. Gregory T. Papanikos  
President  
Athens Institute for Education and Research

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## **Museum and Exhibition Design in the Digital Age**

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### **Abstract**

From temples of sacred objects to repositories of colonial trophies and from monuments of civility to spaces for self-expression, the shape and the appeal of museums through history has been fashioned to hold particular collections of objects. Moreover the museums have been also designed to adapt to particular display techniques appropriate for a particular collection. In the last century, a period of structural reinvention in the design and shaping of the exhibitions, the museum making is challenging, creative, and complex. The 'new museum making' includes emotive exhibitions within communicative buildings in order to create 'narrative experiences' which integrate objects, spaces, and audience. Considering the recent developments in museums and exhibition design to adapt them to contemporary digital age, the museum professionals have increasingly inserted multimedia in the exhibitions. The creative use of technology in exhibitions allows museums to change the way of presenting objects and communicating their meaning to show artifacts in their context, to explain complex idea, to increase opportunities for interactivity, or to provide involving experience. However the excessive use of these tools can become overwhelming compared to objects themselves, transforming the museum into mere attraction. So, how can architects, curators, and/or exhibitions designers build effective and communicative museums and exhibitions through new tools of communication? Are new media becoming integral to our notions of museum?

The paper, through diverse examples, aims to provide an overview of interpretative tools, their historical precedent uses, and their roles in generating interaction and interactivity today.

**Keywords:** Exhibition design, new media, interpretative tools, interactivity

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## **Museum as Narrative Medium**

The museum is more than a place. It is a network of connections between people and objects. It houses *objects* but talks with *people* and that is why it can be interpreted as an important and effective means of communication.

The museum, as *complex machine of communication and transmission of knowledge* similarly to theatre or cinema, affirms itself as a medium. It is based around objects, but also on audible, visual, or direct manipulation tools. It can be centred on languages that are written, graphic, oral, iconic and even gestural languages. Finally it can talk about theatrical performances, either directly or in a simulated environment. The complexity that characterises the museum sometimes is the only way to make particular objects understandable; on the other hand it can act negatively, making the exhibits an overwhelming performance compared to the objects, which are themselves the primary goal of an exhibition (Ruggieri Tricoli, 2000).

A century has already passed since Marshall McLuhan (1964) said that what it is said is deeply conditioned by the medium through which it is said, emphasizing how each tool should be only a mean. However, according to the use one makes of that tool, the mean itself can greatly influence the message that, indeed, is the unique aim in a museum

### *The Museum a Place for Disseminating Knowledge*

Museums play a fundamental role in the transmission of human culture and history. Being *communication experts* they ought to be aware of the importance and value of the exchange of information with the public, who then will turn this material into personal knowledge and will keep it as a valuable resource. For a community to master its knowledge of history, which is made through the presentation and exchange of information, it is necessary that the different constituents feel part of the community itself, especially within the museum that is 'the colossal mirror in which man finally contemplates himself in every aspect' (Bataille, 1997, 23).

The museum fascinates its visitors through the variety and quality of its objects; this is precisely what distinguishes the museum as a centre of learning. The concern should not be to attract the audience with artificial and experimental strategies, with the only aim of entertaining visitors. The message should be structured to be easily understandable. Above all, it is important that the exhibition will enrich the prior knowledge of the public on that particular theme. As John Hale, well-known professor of English history states:

*Let me say at once that I hate the idea of museums being used primarily as teaching aids of any sort. Their first job is to house valuable objects safely and display them attractively. (...) The second responsibility is to those who are already educated, to the student, the collector, the informed amateur. (...) A third responsibility to put above anything specifically educational is, in*

*the case of certain museums, a loyalty to their own personalities*  
(Hale, 1968 in Olofsson, 1979, 10).

It is necessary to maintain a dialogue between past and present, helping to create a connection between them. Hence the rapport and exchange between conformists' and pioneers' theories can offer an answer to some important questions in the field of museum studies: how have research practices and museographers' expectations changed? How are they changing at the moment? What is the impact that these expectations have on the role and the effect of communication in museums? Are we certain that the use of digital media will render museums more interesting and more communicative?

*The Museum: From Tradition to Innovation*

The different activities of a museum, such as conservation, research, education, and entertainment merge into the exhibition, the true purpose. Since the half of last century, museums have drawn interest from exhibition designers. In fact the construction of new exhibits has increased, diffusing new ideas on how to communicate better with the audience. But the awareness of the importance of space, where objects are showed, lies in history.

It seems that human beings have the innate necessity of collecting precious things for their own memory, placing them in a place to suitably preserve them. On one hand this is a consequence of the desire to withdraw objects, which are witnesses of their own history, from oblivion; on the other hand, it is about the aspiration to collect treasures and keep them in a sacred place (Ruggieri Tricoli, 2000). It was already common in ancient Greece to build the *thesauroi* as a place to store precious treasures, as furnishing or objects consecrated to divinities. This custom could be already considered an idea of collectionism, although the valuable objects were not appreciated for their artistic or historical significance but for their spiritual value.

According to Ross Parry (2005), through history, the museum, a flexible and adaptive place, has been designed to house specific and particular collections of objects. We could think of the Double Cube Room at Wilton House that remains a fine example of an architectural idea shaped by the collection's curators of the collection. The project of Inigo Jones, important British architect and designer, well known for disseminating Renaissance architecture beyond the Channel, provided a geometrically perfect solution to exhibit the first collection of portraits by Van Dyck in the Pembroke family property. Otherwise we might remember that Elias Ashmole ordered that after his death (in 1677) his collection would pass to the University of Oxford on the condition that a particular building, the Ashmolean Museum since 1683, would have specifically designed to host it. Another example might be the *Kunstkamera* of Peter the Great in St. Petersburg, built in the early Eighteenth Century as museum specifically dedicated to preserve the natural and human curiosities and rarities from the Tsar's collection.

Even if we consider some important exceptions, such as the Pavilions of the Universal Expositions (e.g. the one in Paris in 1867 or in Philadelphia in

1876), which deserve an apart dissertation because as Ian Ritchie (2003) clearly explains defining them as ‘an architectural taste for style, often quite independent of the contents on display’, the importance of the collection has directly influenced the design of many museum spaces.

However, it is important to remember that throughout history rooms and buildings have been designed to hold specific collections of objects, but also with the intention of representing them through the more appropriate display techniques. So the exhibition tools can become an important level, if not even the main level, to characterize the shape of the museum space.

*If we consider, for instance, the dense and intensely personal repository that is Francesco I de Medici’s studiolo (1570-75) in Palazzo Vecchio (Florence), it is ostensibly a private exhibition of manuscript books, gems and precious objects formed as evidence to the patron-collector’s acquired wealth and learning. Bu, in another sense, it also exists as a testimony to how display technologies could shape and define a space (Parry 2005, 40).*

The rectangular room is decorated with painted panels that recall Francesco I’s scientific, magical, and alchemic interests, which he used to dedicate his time in the solitude of his *studiolo*. Furthermore the glass cases were decorated with paintings strongly linked to the objects themselves to contextualise them.

Elsewhere across Europe, other techniques of display and communication were influencing the design of the exhibition space. It was, for instance, the use of boxes, chests, drawers, trays, tables, and shelves that characterized spaces such as the Archduke Ferdinand II’s *Kunstkammer* in Ambras.

After the proclamation of the museum as *a cemetery of objects*, therefore as a static institution and a place of negation by the Avant-garde, over the years it has been rethought as an abstract and conceptual place. Consequently it starts affirming the idea of the museum as unique depositary of a nation’s heritage, something that is otherwise difficult to comprehend in its entirety.

In the 1930’s, the at the time young George Henri Rivière at last decided to direct his life towards museology and ethnography, after being a musician. He thus began to study the experienced Arthur Emmanuel Hazelius with whom he strongly dissociates himself insomuch as to proceed in a new direction, which he called the *destruction cérémonielle des mannequins* (Rivière, 1989, 50). His working will earn him an important role in the French museology as innovator of new displays techniques for ethnography exhibitions<sup>1</sup>. The first real experience of Rivière was in 1928, alongside of the great ethnologist Paul Rivet in the administration of the *Musée d’Ethnographie*, housed in the Palace of Trocadero in Paris (which became in 1937 the *Musée de l’Homme* with a new exhibition project). The whole philosophy of Rivière arises from the idea

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<sup>1</sup>During the period between the two World Wars, ethnology in France experienced an important theoretical renaissance marked by the institutionalization of the discipline in 1925, under the aegis of P. Rivet, Mauss and L. Levy-Bruh.



that ethnography exhibitions have the fundamental function of reviving the folk traditions in a period in which cities were increasingly turning into metropolis. But how was it possible to display objects within their complete cultural contexts of production, use, and meaning if not through the presence of man inside the exhibition?

About the importance of the human figure to involve the audience, Rivet wrote:

*L'humanité est un tout indivisible, non seulement dans l'espace, mais aussi dans le temps. Les divisions auxquelles l'immensité de la tâche a obligé les savants: anthropologie, physique, préhistoire, archéologie, ethnographie, folklore, sociologie, linguistique, sont aussi factices que les classifications basées sur la géographie politique [...] Il était temps de les briser (Mohen, 2004, 47).*

Therefore, following these principles, the two masters matured the idea of the impossibility of using mannequins for the representation of the various and complex human ability in creating objects and using them for the purpose of building diverse societies, economies, and cultural environments.

The real innovation of Rivière was fully expressed in the design of the *Musée des Arts et Traditions Populaires* (MNATP) that was located in 1937 at the Palais de Chaillot, and in a second time, after 1969, in a new building in the Bois de Boulogne. During this occasion he, indeed, introduced new display techniques designed to make the human body disappear, but which nevertheless would be perceived or recognised.

Completely dark environments and glass cases, with faint structures and well balanced lights; inside them, clothes and objects reproducing gestures, hover sustained by transparent nylon. Finally sounds, music, words, animal noises. An exhibition that is at the same time *structuraliste et immatériel* that conveys an original, innovative, and modern conception of museum. A clever use of trivial materials such as nylon.

From the *studiolo* to the Exploratorium<sup>1</sup>, museum spaces have continuously be shaped by their display technologies. Moreover, the use of these technologies of communication and, above all, the need to provide new solutions to display a large amount of objects within limited spaces, has heightened the sense of the museum as an *immersive experience*. It is also fundamental to align the museum to the theatricality and to the visual spectacle that is given to it as a space where visitors can have an active and participatory experience. Finally it is important to identify the museum as a place where the audience is carried into a different spatial and temporal dimension. This is the museum as we know it today.

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<sup>1</sup>It was created in 1969 by Frank Oppenheimer, which designed an exhibition based on mobile tables and open-able boxes. He introduced in his museum a new level of interactivity creating around three hundred *interactive experiments*.

Therefore, if it is true that the museum is ‘a medium between objects and the message that they carry’ (Henning, 2006, 35), if it is true that the audience has to completely understand the museum message through its tools, the history and masters of museums have educated us that the museum can make itself *lived history* only if it kills the *exhibited history*. This is possible only if the museum fabricates instruments and situations that go beyond the reality of things, the tradition of the museum, creating triggers for new forms of identification in the media.

*The Museum: Between the Real and the Ephemeral*

In a provocative text debating about the position that the visual culture should occupy in the 21<sup>st</sup> Century, Nicholas Mirzoeff argues that increasingly ‘modern life takes place on screen’ (Mirzoeff, 1999,1). Mirzoeff’s claim is based on the awareness that there has been a fast and decisive change in the way images are viewed and *consumed*, driven by technology’s pace, thus becoming more accessible and usable in new and different ways. Nevertheless the biggest transformation could be detected in the relationship between image and communication techniques that has become deeply embedded of social and audience expectations. Consequently technology ‘is not just a part of everyday-life, it is everyday life’ (Mirzoeff, 1999, 1). It would be impossible to deny that the digital experience has today become integral part of our social context, of which museums are essential component and expression. With the museum being a theatre, a place of rituals, it cannot be immune to such epochal changes. The experience of a museum is incredibly complex and, as George H. Hein (1998) states, it is not easy to understand the process of learning that takes place during the experience. More and more frequently museum researchers emphasize the idea of *experiential learning*, shifting the focus from object to subject, i.e. the visitor.

This implies a profounder attention not only to the way in which the museum environment is designed and manufactured, but also to the way in which the public would perceive and react to the exhibition. This shows once again that the quality of space and the visitor experience are affected and influenced by a display in which the new technologies are present. The best museum, namely the one where new knowledge is created, is the one where knowledge is transmitted by presenting a variety of interesting materials and experiences that are at the same time appropriate to a heterogeneous audience, composed of people of different ages, education levels, personal interests, skills, and expectations.

It is necessary to deeply understand the attributes that relate to the experience of the public to be able to transform the way in which the visitors are exposed to the entities that compose the museum; the same entities that confer the museum its physical nature. The displays that involve *interactive exhibits* have focused particularly on the possibility of visitors to control the stations at the expense of the presented text or visual information. Probably, this is an inevitable result when one favours a *hands-on approach to learning*. However, the use that the public can make of interactive stations is very

influential on the experience of the museum; undoubtedly, the body of texts, images, illustrations, and interactive stations are all part of a clear communication strategy. The interactive displays 'inventors' aim to create a reaction to the display that is fun, attractive and easily understandable and that would lead the visitor towards a discovery of meanings to be learnt. This is specifically the kind of holistic, contextual, and multidisciplinary approach to children museums or to thematic exhibitions of science, history, and archaeology. Visitors are considered travellers who are moving through an unfamiliar city trying to grasp the sense that the setting itself is supposed to convey. Therefore, the interpretation framework ought to be constituted by a main message for all the display, which needs to be the most important concept that one wants to communicate; consequently everything within the exhibition has to be throughout consistent with that message.

The last century has been the greatest historical period for communication: it was, indeed, the century of radio and television, the recording industry, and finally the Internet. In recent years the use of electronic media has become increasingly common in museums and exhibitions; however the educational opportunities, the technical and design aspects of these applications have not always been adequately realized. Today the use of these media has advanced and curators, academics, media designers, and visitors have become more competent and critical in this field, thanks to the proliferation of specific professionals such as visual designers. An example over all is the *Studio Azzurro* in Milan, which has been working for ten years in the museum field designing video-environments, namely sensitive and interactive environments and museum itineraries realised through the exclusive use of new communications technologies. The exhibition *Fare gli Italiani 1861-2011* was displayed in Turin in 2011 for the celebration of 150 years of Italy, located within the stunning scenery of the *Officine Grandi Riparazioni*, an example of industrial archaeology of the beginning of the 20<sup>th</sup> Century. It was a summary of the concept and the work of the firm. Italian history was told through a series of communication strategies that favour the participation of visitors thanks to the use of new technological tools such as sensitive walls, holographic screens, and interaction system based on camera-vision technology.

Another example is a museum unique in Italy, which makes technology the one and only communication tool with the subordinate function of being a place of knowledge and teaching, learning, and entertainment. This is the MAV (*Museo Archeologico Virtuale*) in Herculaneum. The MAV, located just a few steps from the archaeological excavations of ancient Herculaneum, was opened in 2008. The entire exhibition, which sometimes appears not linear, is entirely kept in the dark (the feeling of walking through a place with no light is guaranteed by the dark flooring and ceiling) and aims to lead visitors on a journey back in time, to a minute before the eruption of 79 AD, which destroyed the Roman cities of Pompeii and Herculaneum as narrated by Pliny. The exhibition makes exclusive use of multimedia and interactive technologies; within the display there are in fact over seventy devices,

including virtual and interactive installations. There are touch screens which, by touching them and brushing away a layer of ash, let appear one of the paintings that adorned the walls of ancient Roman villas; also there are fog-screens that evoke the atmosphere of the *thermae*, or holoscreens that virtually reconstruct the ancient treasures now buried under lava, or multi stereoscopic projection dedicated to the eruption of Vesuvius. However, the most widely used technology in the display is the immersive virtual reconstruction: large panoramas depicting the ancient Roman villas, now reduced to ruins, of *Herculaneum*, *Pompeii*, *Stabiae*, and *Capri*. Three-dimensional images are projected on the screens placed on one long wall or on three continuous perpendicular walls where the visitors should stay in the centre. On one hand these reconstructions can be beautiful and fascinating from an illustrative point of view. On the other hand the erroneous reproduction scale and the absence of adequate navigation tools make it almost impossible to orientate yourself in a three-dimensional space. This is one case in which the virtual reconstruction actually distance the user from the memory represented by the context, impeding any type of literacy and leaving the visitor simply with the memory of an interesting technological experience. The perception is that in the MAV the public can *play with the past* thanks to the presentation of daily life of the Herculaneum people and the ancient glories of the city. This is achieved through virtual representation and interpretation that make the visitors *avatars of the past*; the museum is an open digital laboratory, in which one can simulate and visualize what is impossible in reality.

When sensitively applied interactive media can offer many advantages over, for example, textual presentation. Video, audio, and reconstructions can in fact create a dialogue with the contents of the exhibition and its objects. The interaction allows visitors to manage their own experience and to explore the exhibition in more or less depth according to their level of knowledge. Not only the contemplation of a museum sample but the desire of discovering connections, insights, or unexpected points of view, and to investigate beyond what the eyes can see themselves.

A well-conceived use of the media can push the visitor through different tours: which can be alternatively exploratory, narrative, playful, or effective. The design of a convincing station does not give priority to a 'pseudo object' or to a simple presentation of an object. To be more precise, we must think of *new media* as simple tools and elements that need to be integrated in the exhibition. This is the reason why it is likely that they are not too visible in the displays.

Technology should disappear behind exhibits, installations, and presentations. Advanced media should not be seen as a replacement of traditional communication tools but must provide a significant addition to the contemporary techniques. Furthermore, in order to create a real immersive experience and more importantly an experience that is vehicle of knowledge and does not result in a mere technological challenge, it is useful to place the technological devices in hidden places so that they are not visually seen, but only virtually felt. This means lowering the appearance of the machines and their symbolic value and raise the sensitive temperature of the environment,

creating a state of normalcy and familiarity. The intention is to do not complicate technologically what is trivial, do not focus on the needs of the technique, but to highlight the positive consequences of the device, by emphasising its outcomes.

In the European scenario a museum that makes the engagement and interaction with the public its founding principle is the Museum of London. Designed by Moya & Partners was opened in 1976 by the merger of two previous museums; the Guildhall Museum, founded in 1826, and the London Museum, founded in 1912. The Museum of London is today one of the best examples of City Museum, which is a typically British typology, where the museum is understood as an authentic narrative of the events of a city and its inhabitants. It collects materials of all kinds, from Roman finds to everyday objects, from furniture to paintings that best represent the most significant aspects of the long history of the capital. The Museum is an harmonious collection of many display systems; from the most traditional such as cabinets for valuable items, or contextualized display cases for small rooms, models, and period rooms, to the most innovative systems such as touch screens, interactive message boards, and multimedia games.

Over the last 15 years the tools for exhibition have certainly advanced; the use of computers is now universally recognized, *virtual reality is part of everyday life*, graphic production techniques are highly sophisticated, video presentations are close to real; moreover, materials and construction methods can meet all designers' demands. The techniques are not what make a display but clearly a wider range of tools can allow a more appropriate choice for the chosen purpose of communication. It is undeniable that today computerization domains all areas of an exhibition, from the graphics to the design which is achieved using the computer itself. At the same time computers are used for the control of models, animations, interactive displays, lights and sounds, and all the special effects. But we must not forget that all of these are useful tools, nothing else. The museum spaces, as repeatedly stated, are guardians of history, but the mission of the museum is not simply the conservation of objects and stories associated with them. The communication of a message, through the museography and the design of the installation is the focus of this paper. The design of a display always includes a reference to contemporary history. The ideas of how a contemporary exhibition should look like are constantly changing. However, although the methods of the museographer have changed over time, a good communicative exhibition does not necessarily need to use the latest communication techniques. As the journalist Debra Galant (2000) states in an article in the *New York Times*, many museums today seem less and less places of culture and more multimedia amusement parks, with giant Imax screens, eccentric exhibits and latest generation toys scattered around the space. Often the sceptic use of advanced media in museums stems from the perception that they are against the nature of the museum. They are mentally associated with virtual hi-technologies, related to the scope of entertainment and constantly evolving; on the contrary museums are seen as static, permanent, and monumental places. In agreement with what Michelle

Henning (Henning, 2006) says there are fewer differences than those that appear and the idea that the introduction of new media improves the appearance of the museum is certainly an overstatement of the technologies themselves; on the other hand we should deepen their ability to communicate knowledge and to stimulate the audience's attention.

## Conclusions

As said, today new exposition technologies, such as multimedia kiosks, portable devices, or interactive message boards, are increasingly being used in museums. The presence of such instruments changes the image that the museum gives of itself through a new way of displaying artefacts; this therefore influences the relationship with visitors. It is true that new technologies are often introduced for their potential to change and improve the existing order and presentation of objects. However, what sometimes happens is the destruction of the equilibrium; the museum is transformed and popularized and communication turns into *attraction* following that process of 'Disneyfication' often mentioned in contemporary debate.

In conclusion, museums and museum exhibits are today at a crossroads in which *virtual reality*, *augmented experience*, and *cyberspace* are terms widely accepted in the common vocabulary; they are involved in a society in which technological evolution is proceeding at great speed, and in a *digital age* where we talk about *dematerialization of architecture*. On one hand, the museum is an institution that expresses its community and it is a protagonist of educational learning, and dissemination processes. It cannot avoid the evolution that is changing all cultural sites. On the other hand, museum must maintain its strong communicative component and its aura of awe and wonder of their physical layout to preserve their historical continuity. Museums should shed light on the indissolubility between the displayed object and information to it related within a precise physical space that can express its real meaning. Therefore, it is essential to create a fair balance between the communication tools, choosing from time to time the ones that are more interpretive in relation to the content displayed.

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**Figure 1.** Florence, Francesco I de Medici's Studiolo



Source: Ruggieri Tricoli, M.C. (2004), *Il Richiamo dell'Eden: dal collezionismo naturalistico all'esposizione museale*. Florence: Vallecchi. [In Italian]

**Figure 2.** Paris, MNATP. Exhibition by George Henri Rivière



Source: Photo © Pier Paolo Raffa

**Figure 3.** Torino, Fare gli Italiani 1861-2011. Exhibition by Studio Azzurro



Source: Photo © Personal Picture

**Figure 4.** Ercolano, MAV



Source: Photo © MAV Archives