Users want experience over product, as going through it makes people feel enriched in their characters and personalities. This concept, dealing with experiential marketing, is even more valid in cultural and social matters (Kotler and Kotler, 2004). But what can be considered as a good and satisfying experience when we are talking about science and technology communication? Which standards can be evaluated as good-quality when communication is developed inside museums, science centres or exhibitions?

Contemporary museums can be actually considered as privileged means for communication, playing a central role in making culture accessible to the mass audience, and museology is indeed facing structural changes in last decades. A core question of this renovation process deals with new technologies and their several implications: since we live in a multi-connected era, we actually expect to find a technological element in almost everyday life aspect, both in our professional and in our pleasure activities. Moreover, we expect to participate in dialogue and not to passively receive information. Museums, cultural and scientific institutions are renovating their communication methodology and investigating how new media can be integrated to this purpose and what they should offer (Various authors, 2002).

In the following, some of the several interesting data published in 2010, in a document referring to the use/benefits of ICT tools for cultural heritage institutions in Italy are provided (Various authors, 2010):

- What is your judgement on introducing new technologies?
  54% Good 21% Excellent 14% Sufficient 11% Insufficient

- Which impact did it have on the users?
  46% High 42% Medium 6% Low 6% Excellent

- What reasons are there to introduce new technologies for valorisation of cultural heritage?
  45.4% Diffusion of knowledge – 32.3% Satisfying users’ needs – 26.2% Didactic purposes – 10.1% Economic development

It therefore seems that it is not for economic return that cultural heritage institutions are interested in new media but, instead, the intent to offer a more complete experience and, consequently, to yield a good image return. New technologies allow museum curators to
modulate flexible cultural proposals, so as to keep into account that the public is heterogeneous. Since 1969 when Frank Oppenheimer opened the Exploratorium intertwining Art and Science a new conception of exhibition (and communication) was created, aiming “to support a culture of experimentation and collaboration, inspire curiosity and understanding, and stimulate fresh ideas and directions.” Those two separated fields have become a part of a whole method to explore the outside world, and its “hands-on” revolutionary approach still represents an essential heritage for the science centres that came later.

Contemporary ICT, including Web 2.0, fits in perfectly with this interactive approach. A few examples may hint at the general trend, although they definitely do not exhaust the whole range of possibilities of new media/interactive paradigms:

- **Applications for mobile devices: Rama Tours**
  
  (“More than just a digital tour guide, Rama make history come alive like never before by using archival photographs and other images to show you how those places once actually looked”. http://www.crimsonbamboo.com/ramatours)

- **Web 2.0: Google Body, Google Art**
  
  (Offering the possibility to create your own gallery http://www.googleartproject.com, http://bodybrowser.googlelabs.com)

- **Museums and exhibitions including new media**
  
  (Ongoing exhibition such as “Prints and the Pursuit of Knowledge in Early Modern Europe, Sep 6 2011-Dec 10, 2011” at Harvard Art Museum. http://www.harvardartmuseums.org/exhibitions/upcoming/detail.dot?id=33226)

The actual, modern concept of “Museum 2.0” (http://www.participatorymuseum.org/) is something extremely contemporary, not only because it deals with audience participation, but also because it puts audience in the middle of the communication process and not at the end. Specific literature brings several examples of museums and science centres experiencing new media and new communication paradigms (Arends, 2003, 2004; Merzagora, Rodari, 2007) studying their visitors and trying to define appropriate standards about our initial inquiries:

1. What can be considered as a good and satisfying experience when we are talking about science and technology communication?
2. Which standards can be evaluated as good-quality when communication is developed inside museums, science centers or exhibitions?

It seems that interaction itself is the way to increase:

1. Communication – from the Museum to visitors
2. Experience – of the visitors inside the Museum
3. Feedback – from the visitors to the Museum

It must be said that scientific museums and exhibitions gain the intrinsic advantage of getting the public involved: visitors can naturally experience an interactive approach during their visit. Nonetheless, there is often the risk of a gap arising between scientific communication
and the general public: if museums fail to set appropriate instruments and models, people could feel uncomfortable and get bored by exhibitions. Developing new media, studying new formats and testing audience responses is a good method to collect data and help reaching higher quality levels in science and technology communication.

What we have done at the University Anatomical Museum of Pisa, in collaboration with the Perceptual Robotics (Percro) Laboratory of Scuola Sant’Anna of Pisa, is to focus on how multimedia applications can improve accessibility and educational aspects. Through questionnaires, we have conducted an analysis of people’s experience inside the museum, in order to focus the main aspects/problems concerning the approach to the medical and scientific collections.

What we have ascertained is that, on a sample of 80 persons – very different in education level, age, nationality and gender – 90% of them showed interest in the possibility of interacting with multimedia elements during their visit. On the basis of these results we have developed two interactive applications, based on different objects and different interactive paradigms.

Multimedia format

The term “Information Landscape” (IL) was coined by Muriel Cooper, founder of the Visible Language Workshop at MIT Media Laboratory (Small, 1994, 1996). ILs represent a synthetic 3D environment generated in the computer, with which a user can interact in a realistic manner. The main difference between IL and a conventional virtual environment concerns virtual elements: they are usually structured as geometric shapes on which texts and images are conveniently placed, allowing user interactive experience. ILs are based on principles and metaphors that permit creation of very different worlds: Percro Laboratory has developed a tool to assist the design and authoring of IL (Ruffaldi, Bergamasco, 2005). For the Anatomical Museum of Pisa, we have structured the first part as a corridor where information are placed and perceived from the user in a sequential way, as shown in Figure 1.
The second part of the IL is focused on virtual “rooms” hosting specific objects from the Collection. In every room information about objects are showed; information are distributed in an immersive space, so as to allow the user to loosely visualise and navigate through them. The “Virtual Gallery” (Figure 2) is a sort of multimedia catalogue showing homogeneous objects through an immersive presentation, offering a complementary vision of the exhibition. The basic principle is that of the interactive slideshow, though the pictures are presented as floating in a 3D space in a descending spiral shape. User interaction is limited to the browsing of the pictures and can be achieved by means of standard input devices (mouse, keyboard), or more advanced ones (smartphones, touch surfaces, motion sensors).

Figure 2

**Conclusion**

The presented interactive tools have been developed in the framework of a PhD research, focusing on the development and the evaluation of interactive formats for scientific museums and institutions.

Our aim is to verify and increase the value of the experience provided by multimedia resources, both for their educational value and for engagement they offer. It is a matter of fact that multimedia play a role in every form of contemporary communication; it is our assignment to study and define suitable models for the undeniable changes our society is facing out.

**Bibliography**


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