

Kim H. Veltman

Trends and Perspectives: The New Technologies

Panel, *European Museum Forum*, Palazzo Reale di Pisa, 19 May 2001.

Published as: *European Museum Forum*, Palazzo Reale di Pisa, 2001, Quaderni. Cultura Europea e Musei, Pontedera: Fondazione Piaggio, Nuova Serie, no. 1, 2002, pp. 144-157.

With an Italian translation: "Tendenze e prospettive: le nuove tecnologie."

New technologies are changing many aspects of our approach to objects in museums. In his words of welcome, Professor Benedetti, pointed to a paradox that museums are traditionally collections of objects, the original contexts of which have been destroyed or at least de-contextualized: i.e. the majority of museum objects were once in churches, palaces, homes, factories and other buildings which have since changed in function or no longer exist.

This decontextualization has shifted as the nature of museums has shifted in scope. For instance, during the Renaissance, the Uffizi reflected the personal collections of a powerful Medici family. During the 19th century museums and galleries became universal in their scope: e.g. the British Museum and the Victoria and Albert Museum (London), the Louvre (Paris) or the Smithsonian (Washington etc.). This universalism brought with it new problems. Only the "best" pieces could be displayed. Hence, much of the collection was relegated to basements and storage areas. Technologies were used to show off pieces, which were in fashion and to hide the rest.

During the 20th century this notion of universalism in a single institution was largely abandoned. In its place arose the idea that there could be museums about topics, which were previously ignored: industry, water, farms, trains, or which did not exist in earlier centuries: planes, buses, cars, games. As we enter the 21st century there are visions of a new distributed universalism, whereby collections from museums scattered throughout the world can be integrated on-line to create new virtual and imaginary museums.

Some of these will be constructed by museum professionals. Others will be constructed by private individuals, general users, members of the public. Kunst and Wunderkammern were once a hobby of an aristocratic elite. New technologies potentially allow "everyman" to create their own virtual equivalents of such collections. Low level versions of such personal museums can be free (as on the website of the Metropolitan Museum), while high level versions with high quality images are likely to come with a fee attached.

The new technologies are changing our approach to reproductions of objects. Fifty years ago, museum shops were typically limited to a museum guide, occasional publications and postcards. In the past years there has been an increasing emphasis on reproducing not just images of paintings but also objects such as sculptures, vases, plates, coins, and even articles of clothing including ties. Major institutions such as

the Louvre now have a whole series of physical shops as well as online versions. New developments in stereo-lithography mean that such objects can theoretically be reproduced on demand.

In the past technologies reproduced only the surface of paintings in terms of postcards, and posters. The new technologies are introducing ever more methods to see what is beneath the surface of paintings and other objects, using x-rays, infrared-reflectography and other techniques at the atomic level. Hence, the Louvre, for instance has 250 persons in its laboratory for research and restoration, and many technologies including an atomic particle accelerator.

In the case of some 15,000 paintings the Louvre has reproduced much more than the original surface of the painting. They typically have as many as 150 images for each painting showing many aspects beneath the surface. Similar work is happening in the research departments of all the great museums and galleries. Implicit in this enormous body of material are the foundations of a new art history of the future which will integrate knowledge of the surfaces of paintings (cf. connoisseurs) with knowledge of what lies beneath the surface (cf. conservators and restorers): a new synthesis of the old oppositions of Venturi versus the Longhi schools of art history in Italy.

In the past, such material was typically made accessible only through specialized journals of museum conservation and restoration. In the future, these materials can be made available online. The Louvre, for example, is translating all its databases into open source, Linux format, in order that these materials can be shared freely. Combining the insights of museums through distributed networks introduces the possibility of new global laboratories, whereby museum professionals and members of the public alike can learn many new things about the contexts of the paintings and objects in collections.

All this can have many implications for education. Great museums have traditionally had education departments, primarily to help children and students when visiting museums in person. The Hermitage, for instance, has over 50 persons working full time in their education department. If the collections of the world's museums are made available online this can provide enormously useful resources for children and students everywhere.

The advent of wireless technology, especially the new Home Audio Visual Information (HAVI) standard, introduces many new possibilities. In the past, a museum guide took a crowd of 20-40 persons in front of a famous painting in order to explain its contents and significance. The past decades have increasingly seen the advent of audio tapes, which allow individual persons to have a pre-recorded guide while viewing a painting or object.

The rise of wireless Personal Digital Assistants (PDAs) means that these pre-recorded guides can be linked via Internet to much larger repositories of knowledge and information. These Personal Digital Assistants can show preparatory drawings, various stages in the composition of a painting, various levels of a painting, other paintings by a given artist, and even the original context from which a painting or object derived.

One of the most dramatic new frontiers of technology is in the realm of nano-technology, whereby it is becoming possible to create computers which are a few billionths of a meter in size. This will lead to the so-called disappearing computer. According to one recent report a gramme of DNA used for computing will in future have a storage capacity equal to 1 trillion CD-ROMS. This means that the full text of the world's greatest libraries and archives, and images of all the museums could literally be in our hands. The old song, "I've got the whole world in my hands, will have an entirely new meaning."

In the vision of companies such as Philips these developments in nano-technology will lead to "ambient intelligence," whereby windows can function as monitors and television screens, whereby stereo sets become invisible and whereby every object can have its own computer. Implicit in this vision is the possibility that every painting and museum object has its own, invisible, embedded computer. This can have important implications for the realm of insurance for it means that every object can effectively be traced as it moves. Attempts to remove such embedded chips can be linked with special alarms in order to inform authorities of unauthorized movements of a museum piece.

These nano-computers embedded in paintings, museum objects and potentially in every object in the environment can do much more than serve as invisible alarm systems. They can serve to tell us complete stories concerning the painting or object in question: stories concerning their provenance, their various restorations, their different reconstructions, their attributions and their ascribed significance. They can help make visible differences between different schools of interpretation: for instance, how French views of Leonardo's *Mona Lisa* differ from German or Italian views.

A generation ago technologies of reproduction focussed on reproducing individual objects. In the past decade, there has been ever greater attention to the reconstruction of the contexts wherein these objects are and were. For instance, a project by Infobyte (Rome) reproduces in virtual reality a) the individual frescoes of Raphael's *Stanze*; b) the entire rooms where they are found and c) also the spaces represented in the paintings themselves. Other efforts such as the NUovo Museo Elettronico (NUME) project are reconstructing the entire inner city of Bologna in the course of the past millennium such that one can trace how buildings have changed in the course of the past thousand years.

In countries such as Bulgaria there are museum towns,¹ whereby the whole town is a museum. In such cases the notion of museum objects evolves into whole environments which function as museums. Such examples point to very different approaches than the traditional decontextualization to which Professor Benedetti drew our attention. Instead of being mausoleums for dead objects out of context, we could reach a stage where all the world's a museum, where the environment itself has embedded in itself its own stories and histories, not just the standard versions but also the conflicting and sometimes entirely contradictory stories concerning the same reality.

In such a world the new technologies would do much more than provide postcards or a quick guide to a church. Using stereoscopic glasses and similar technologies for augmented reality, they could a) describe the contents of a church or palace as it is

now and b) show us how that church, palace or other edifice has changed over the ages from a Romanesque construction, then Gothic, then Renaissance, then Baroque and finally into what it is today. Instead of speaking of de-construction, the new technologies will show us different reconstructions, different interpretations concerning origins, developments and changes. They will help make visible cultural and historical dimensions of knowledge. They will help us see not only what is there today but also how it became what it is.

Through such reconstructions at all levels the new technologies are taking us far beyond the isolated objects of museums and galleries. They are helping us to understand the places from which they derive, their environments, they are helping us to understand that our whole world is a museum and that Foucault's poetic reference to an archaeology of knowledge potentially entails a new knowledge where every object, every environment has its own archaeology and history.

Traditionally, archaeology was paradoxically the only discipline, which consciously destroyed its context to arrive at new knowledge. As the new technologies provide us ever new ways to dig deeper into our past, this paradox does not disappear but acquires new layers of meaning. As we destroy and decontextualize some aspects of our past we learn to recontextualize and understand more deeply those which we have chosen or are still able to display. Gradually we are realizing that museums are not just special environments for objects out of context. Museums are a mental set for understanding that all objects, all environments are linked temporally, spatially, historically and culturally.

Maastricht May 2001.

Notes

¹ See: http://www.travel-bulgaria.com/content/museum_towns.shtml