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Ion Gil Fuentetaja, Maria Economou

STUDYING THE TYPE OF ONLINE ACCESS PROVIDED TO MUSEUM COLLECTIONS

Ion Gil Fuentetaja & Maria Economou
Museology Laboratory, Department of Cultural Technology & Communication
University of the Aegean
Har. Trikoupi & Faonos Street,
Mytilene 81100
Greece
ion.gil@aegean.gr, m.economou@aegean.gr
http://www.aegean.gr/culturaltec/museologylab/

Abstract

Information and Communication Technologies offer considerable possibilities for supporting cultural institutions, in terms of conservation, dissemination and communication with different audiences. One of the most widespread technological developments has been the creation of institutional museum websites. However, simple static websites are proving insufficient for fulfilling the expectations of digital users, as these increasingly ask for wider inclusion and greater versatility in the presentation of collections and related information. The current trend for cultural organisations is to move in this direction, providing web access to their collection information systems, as part of a wider effort to increase public access to collections for diverse audiences. However, the effectiveness of these tools has not been tested so far, nor has its use been examined in depth. This paper is part of a wider research project, aiming at studying how digital cultural collections are used by end users and identifying some clearer patterns of use. This will be related with the various communication and technological approaches adopted by museums in presenting their collections on the web. The results presented here are part of a broader discussion about accessibility, dissemination, and use of cultural information by different users in various contexts.

INTRODUCTION

Information and Communication Technologies (ICT) have been having considerable impact in the cultural domain over the last few decades which should be carefully examined. They have been playing an important role, among others, in facilitating learning and communication in the cultural domain. The adaptation of ICT to the necessities of the cultural sector has increased during recent times, partly influenced by

the need for a higher degree of competitiveness on a more global market, reflected by recent political strategic documents, such as the report from the Lisbon European Council of 2003. Cultural content has been one of the many fields where innovative technological applications have been applied and there are many cultural institutions worldwide experimenting with new ways of communicating and presenting these digital assets, taking advantage of the opportunities presented by ICT.

Technological innovation, beyond the mere economic benefit of competitiveness, can also have an impact in the social, cultural and political spheres, enhancing human capabilities and empowerment. The EU as a socio-cultural entity aims at converting itself into the leading knowledge-based society, preserving and reinforcing its cultural richness and diversity. This determination has fostered a more intensive use of ICT in society as a whole. Even if in the beginning the emphasis was on technological and mercantile aspects concerning the globalization process [Quéau, 2003], currently the emphasis has shifted towards the civic potential and collective social development capabilities of ICT.

Cultural agents and content generators, however, often apply the available technologies to traditional museum practices, without paying sufficient attention to the ways users expect to interact with the system or to the cognitive, functional and aesthetic factors involved, even if one of the main aims of the ICT implementation is usually claimed to be to enhance visitors' experience. The implementation of technology has offered museums the tools to avoid a mere electronic reproduction of the actual content, allowing them to add some value to exhibitions, presenting complementary information that otherwise will not be available for users. In this sense, one important milestone for museums has been since the nineties, but mainly during more recent times, the appearance and consolidation of the so-called Knowledge Society and the irruption of technologies in the cultural realm. This irruption implies important changes in the practices of storage, conservation and preservation, but above all of diffusion and communication of cultural content, making this theoretically more accessible to a broader public and ideally to the whole of society. In this context museums are trying to take advantage of the potential of the implementation of technological applications, creating their own websites, digital collections and even virtual museums.

THE CHANGING PARADIGM OF MUSEUM COMMUNICATION

The role of museums to communicate to a diverse audience has been recognized since their evolution as contemporary cultural organisations. As the perception of the potential audience evolved, the idea of communication and education changed accordingly. The way museums communicate has evolved in parallel with the role they play in society and their definition as institutions. In other words, it is not possible to speak about a uniform paradigm of communication all along the history of museums, because this has changed according to the needs and demands of society as a whole.

Once their initial emphasis of a mere aesthetic experience or their link to supranatural powers was overcome, modern museums achieved a role as educational sites, where visitors were instructed about the collections the institution held. The communication of this content to the increasingly diversified audience has also evolved following the history of museums as institutions. Until quite recent times, the communication of cultural and educational content was made from a linear, unidirectional perspective, where the only actors were the curator (as transmitter of the content) and the visitor (as recipient of that content). Moreover, during most of this time, the communication of educational content pursued the clearly identified objective of instructing people and reinforcing a concrete model of society with its values and holistic perception of the surrounding world. In all of these attempts, the producer of the message (mainly curators and museum authorities) was the most determinant factor defining the experience of the visitor [Hooper-Greenhill, 1999].

But with the quite recent introduction of scientific disciplines such as sociology or paedagogy into the realm of museums and museology, as well as related to other factors as the spreading of mass media in society, this linear unilateral communication paradigm has evolved into a more complex one, where emphasis is placed on the construction of meaning according to the visitors' personal context. The role played by ICT in this process is very important, because it facilitates a more continuous and flexible process where individuals adapt the message to their personal context. In other words, the same message can have different readings depending on the context of the

recipient. This new more flexible model of emitting and receiving the message clashed directly with the previous unidirectional perspective.

In fact, as Hooper-Greenhill stated, 'the moment of reading is as important as the moment of creation' [1994:25]. Any visitor to any museum, and even to its recently arising digital spaces, is not an isolated body, because s/he will always arrive together with his/her personal background and framework, which will condition all the new content to fit into his/her pre-existing conceptual categories [Ham, 1994:110-111]. This is why communication is now seen as a process between two actors, the one transmitting and the one receiving, with a message that will be interpreted independently according to the circumstances of the recipient. This means that also the discourse can no longer be linear, because the content providers (museum staff) have to take into account that it will be modulated by each content-gatherer individually, selecting the parts of the content they want or know that can be easily adjusted to their current conceptual frameworks.

"Learning is a continuous, active process of assimilating and accommodating information within social, physical, and psychological contexts. Learning involves more than mere assimilation of information; it requires the active accommodation of information in mental structures which permit its use at a later time" [Falk and Dierking, 1992:113]. The 'signifier' of the message can still remain the same, but its 'signifying' will change greatly accordingly to each visitor. These different communication paradigms can also influence the different models of presenting content to museum audiences in the digital space of the institution. Following these ideas, we can distinguish two main models of providing access to the digital visitor.

- Access to information. This refers to making museum information available to everyone. So the main processes of this perspective can be identified as the multilingual content (available for non-native language speakers) or the digitization of content (available for anyone anytime). Following this model, museums make basic information, the raw data about their collections available to the broad public, but with no further elaboration. This refers to the mere 'transposition' of their physical information (such as databases, catalogues, labels, and so on) to the digital sphere.

- Access to knowledge. This goes one step beyond the previous approach. After making information available to users, institutions try to provide complementary 'information', approaches or tools to help them unlock the meaning behind cultural content. This model is based on a different educational perspective and can follow various approaches to learning activities, which can vary significantly among cultural institutions. The first difference lies on the physical or virtual character of the activities. But probably the main divergence can be identified with the degree of interactivity of the activity. It can range from contextualization of the content (e.g. facts and information about the context in which the object was created or about the meaning of the object itself) or links to other related content to more dynamic and participative processes, where the user is supposed to acquire related knowledge by actively interacting with the content itself.

These approaches affect the way cultural institutions design their websites and grant different types of access to their collections and catalogue information.

NEW TECHNOLOGIES AND MUSEUMS

Since the introduction of new technologies in the cultural realm, museums have been facing a great challenge, because the implementation of ICT implies a deeper transformation of the cultural sector. The influence of technology in the cultural sector can be identified in four main areas: passing on of information and knowledge; global access to Cultural Heritage; preservation of cultural assets; and more efficient cultural research [Artnouveau, 2003].

The digitization process has also raised an important theoretical debate. Authors such as Sassen [2002], identify within the framework of digitization two interrelated but highly different processes, the digitization itself and the so-called socio-digitization. The first one only implies the mere transposition of the information in a digital format, while socio-digitization incorporates characteristics of the social environment in which content was created and digitized. This distinction is important, because digitization, as

explained by Sassen, will only be making a digital copy of one object, without contextualizing or framing it. On the other hand, the inclusion of some social components into the socio-digitization process makes it easier to understand the meaning of the cultural asset on its previous or even original context. The socio-digitization process is quite abstract, but it aims at founding a definite framework for understanding and approaching the processes of making physical objects digital. Until recently museums tended to view digitization following the first definition, but this has started to change.

Museums as agents for preservation of cultural heritage, managers of cultural content and cultural service providers, present a complex model for potential ICT application. An appropriate model for technology implementation in museums should be concerned with these multiple options and embrace both the stages related to the cultural value chain as well as the operation management systems.

The creation of digital spaces of museums has posed a great challenge for these institutions. The incorporation of these spaces to the cultural realm will never lead to the disappearance of the actual museums as was initially feared, but it represents a big opportunity to broaden their audiences, making their contents available to everyone and complimenting physical activities. In fact, some authors state that the presence of a virtual version of the museum can encourage some people to visit the actual museum, as they often only find out about it after discovering its digital version [Bowen, 2000].

RESEARCH PROJECT ON THE USE OF ONLINE MUSEUM COLLECTIONS

Although during recent times the presentation of digital collections in museum websites has proliferated, there are only few studies on the actual use of those collections by the end user. Many website studies have dealt with usability and accessibility or even with pattern of use of the websites as a whole [Loran Gili 2002; Kravchyna and Hastings 2002].

But none of them has analyzed in depth the use of the digital content presented in the website. There are some studies (mainly from the Anglo-Saxon) about the number of users of websites, their paths of visit or even their pattern of visit (duration, pages, day and time of visit, and so on), but they deal with very general topics, such as visited sections or number of visits[1].

The present research aims at acquiring a more complete picture and at identifying some clearer patterns in the use of digital collections by end users. It aims to analyze the real use of these digital collections, dealing with who uses that kind of content, with what purpose and trying to define some patterns of behaviour concerning not the general use of the museum websites, but the specific use of the digital collections.

The first step in this process was the identification of different models of using ICT to present museum collections and catalogues digitally. Stemming from the previous conceptualization of the use of technologies by museums to establish their digital space, most of the institutional websites have similar structures, related to three different categories.

The first big category, and the most common one among museum websites, is the customer relationship one. In this category institutions cultivate their relationship with the potential customers, giving them information about the institution, its activities or even, in the most complete cases, some ways to send their opinion or feedback. Usually this category appears divided into some subgroups, but the most common structure is to have three different areas. One of them will be a presentation site, where the website normally explains the history and structure of the institution itself. The second one will be the one presenting the opening hours of the museum or information related to its different activities. Finally, there will also be a feedback form or contact section, but in this case the structure ranges from simple contact addresses to more complete digital forms.

[1] As an example of this kind of studies, see Canadian Heritage Information Network's 2004 Survey of Visitors to Museums' Web Space and Physical Space, available at: http://www.chin.gc.ca/English/Pdf/Digital_Content/2004Survey/Museums_Webspace_Survey.pdf

On the other hand, the eMarketing category will be translated into museum websites with virtual shops. In these shops customers can purchase items related to the institution. Usually, these items are delivered digitally (in the case of images, articles, eBooks or digital reproductions of the cultural assets) or physically (in the case of souvenirs, books, reproductions and so on).

The last main category is the one dealing with the contents of the institution. In this case, information about the digitized objects is usually available to the user in the Collection(s) section, but in some cases there are also some educational resources in order to help or reinforce the learning process. Our research project dealt with the contents of the institution and the way these are presented to virtual visitors, leaving the categories of customer relationship and eMarketing aside.

RESEARCH METHODOLOGY

As stated above, the first step taken during the research was to identify the different models of presentation of museum collections and digital catalogues. During this stage we defined some theoretical models based on a practical evaluation supported by the previous literature review.

For the definition of the sample for the analysis we used the Virtual Library of Museums (VLM) of ICOM (http://icom.museum/vlmp). This website was created and is still maintained by Prof. Jonathan Bowen, helped by Prof. John Burke of the Oakland Museum of California for the USA section of the site. A few years after its initial creation, ICOM started to support the site.

The VLM links to the websites of museums all over the world. The entries that appear on VLM are sent voluntarily by the museum staff filling one simple web form, with slight variations according to the origin of the institution.

Because of linguistic constraints and time limitations, the museums analyzed at the first stage were from Spain, the United Kingdom, Germany, Greece and the USA. In the four first cases, the museums analyzed were all the ones that appear in the VLM list. In the

case of the USA, however, because of the large number of museums, the analysis was centred on art and history museums. The total amount of museum websites analyzed was 1921 and it can be divided as follows: USA 955, United Kingdom 518, Germany 299, Spain 138 and Greece 11[2].

After the analysis, some of the cases were disregarded from further analysis because 1) the website did not work or was under construction; or 2) the website did not fulfil the minimum requirements for the analysis. For a more accurate analysis, the study has considered as online digital collections only those presenting at least some highlights of the collection with some minimum data about them. For example, those websites which only have a paragraph describing the collection or some simple photographs of it were not included in the analysis. In the end, the sample studied consisted of 219 entries.

	number of websites listed at the VLM	**Websites with online collections**	**Percentage**
USA	955	110	11,5%
United Kingdom	518	56	10,8%
Germany	299	20	6,7%
Spain	138	31	22,5%
Greece	11	2	18.2%

Figure 2: VLM websites listed at the Virtual Library of Museums site examined and percentage of those presenting some kind of online collection.

DEFINITIONS ADOPTED FOR THE ANALYSIS

The following key terms were used for the purposes of this research: highlights, collections, catalogue and database.

[2] The low number of Greek museums can be explained by the fact that one of the Greek websites analysed belongs to the Hellenic Ministry of Culture (http://odysseus.culture.gr/). This is a portal embracing all the public museums and archaeological sites of Greece, as well as some private collections. Within the portal, every museum has its own site, but the collection of all of them is presented jointly. In order to avoid distortions on the percentages, this portal with all its museums have been treated as one entry.

The difference between highlights and collections lies on the fact that, while highlights only present a selection made by the institution of a part (usually quite small) of the museum holdings, collections on the other hand are quite representative and embrace, if not the whole collection, a big part of it. These two terms do not refer to the type of presentation, but only deal with the proportion of the collection presented on the website.

On the other hand, when we talk about catalogues and databases, there is a clear distinction between them. Catalogues have a browsable character, that is, they mainly present different areas, sections or groupings of the collection and the visitor can access the objects by browsing within these categories through web links. Databases, on the other hand, have a searchable character, enabling visitors to access the content they are looking for in a more targeted way by making use of search terms.

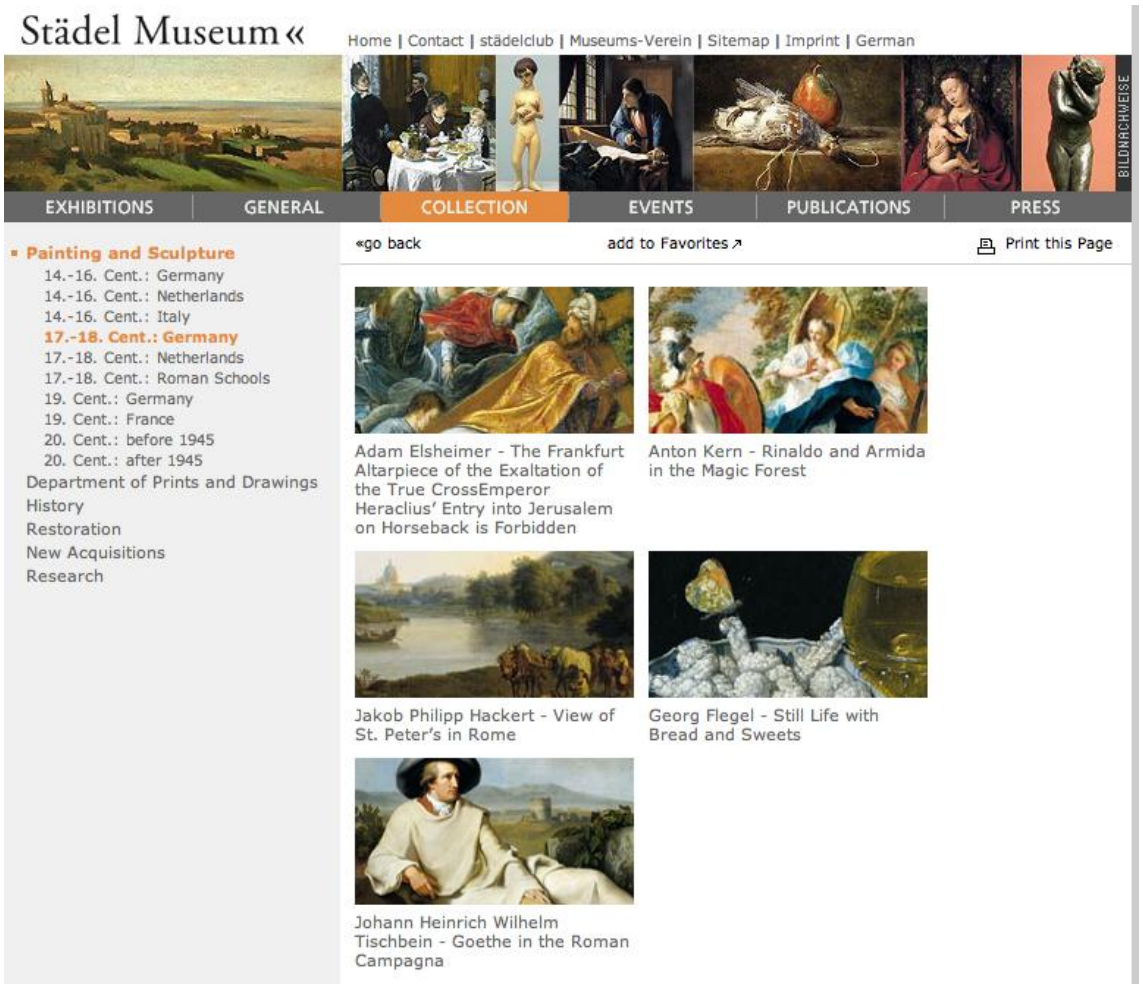

Figure 2: Browsable catalogue presentation. Source: Städel Museum website, Frankfurt am Main, Germany (http://www.staedelmuseum.de/index.php?id=441; accessed 25 May 2008)

It is therefore important to also take into account if the website has some kind of searching tool and the level of search it supports. In our analysis we differentiated three main types of searching tools: The first one is the *simple* searching tool that supports searches using single terms (one at a time). The *advanced* search, on the other hand, is a little bit more complex than the simple one and enables the combination of various search terms (either free text or selected from predefined lists) in order to obtain more accurate results. In most cases, this second kind of searching tool allows users to also perform simple searches. Finally, the third type is the *complex* searching tool which is the one designed for expert users and supports more technical or specialized scientific terms (one example is the searching tool of the database of the Pitt Rivers Museum). We observed that several museums do not have one exclusive type of searching tool,

but a combination of them, which we characterized in the study as *combined* searching tool.

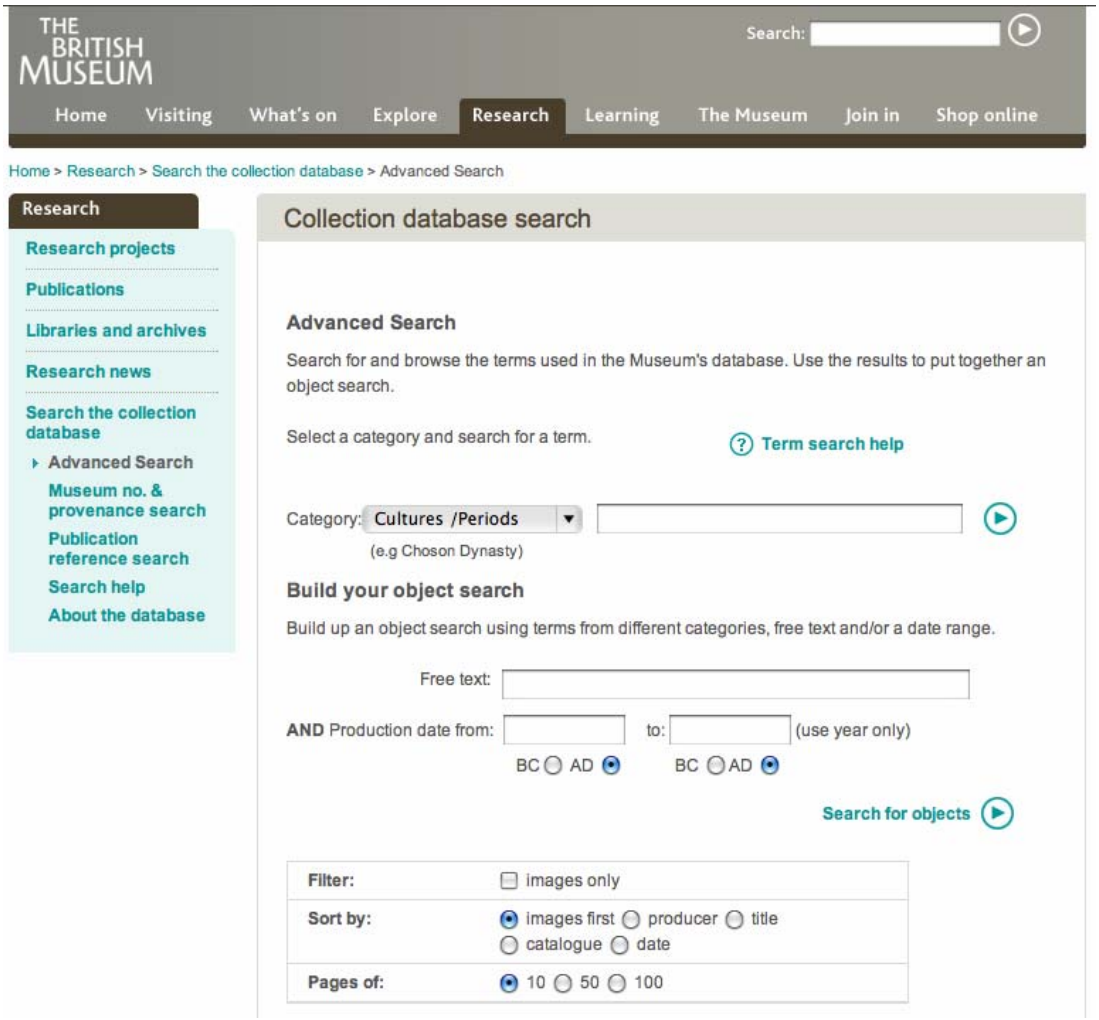

Figure 3: Advanced searching tool. Source: British Museum website (http://www.britishmuseum.org/research/search_the_collection_database/advanced_search.aspx; accessed 25 May 2008)

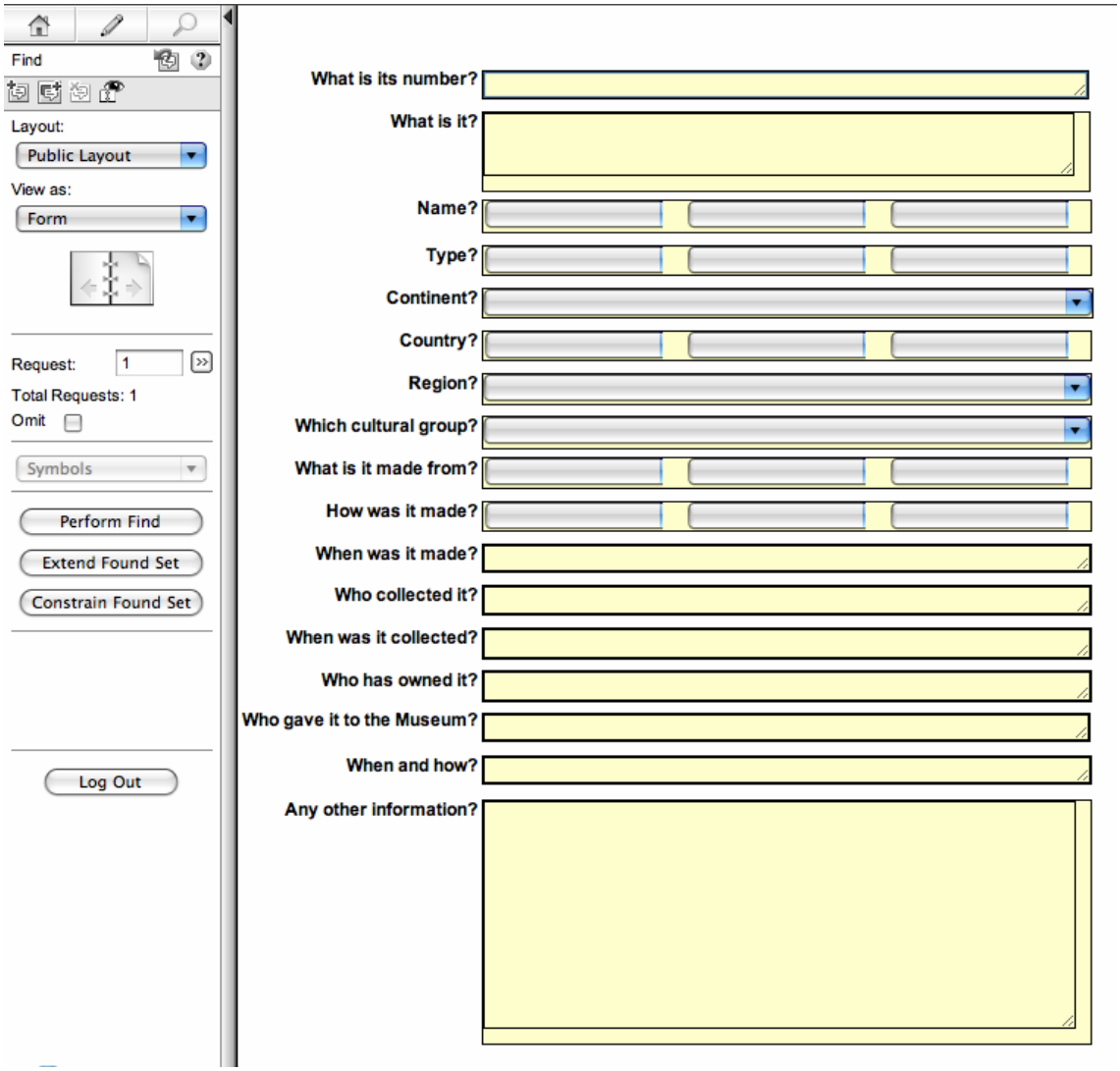

Figure 4: Complex searching tool. Source: Pitt Rivers Museum website (http://pittweb7.prm.ox.ac.uk:16080/fmi/iwp/cgi?-db=Objects%20PRM&-loadframes; accessed 25 May 2008)

Concerning the presentation of the content, we used the following terms and categories in the analysis of the results. *Labels* are the digital equivalent of the physical labels of the actual collections. Under this category we considered the brief informative notes and phrases presenting the main facts about the object, usually related to its identity. More complete than those labels are the options of explanatory texts, creator details and contextualization of the object. *Explanatory texts* offer in greater depth details about the object (such as technique, composition, topic, and so on), while *creator details* present information about the artist or the person or group who created the object. Finally, the *contextualization category* refers to the information about the context (historical, social,

artistic, etc.) in which the object was created or to more specific contextual information about the topic that the object is dealing with. For example, if the website includes a painting of the kidnapping of Europe, some form of contextualization might be information about ancient Greek mythology and about social, historical or artistic aspects of the period of the creation of the artwork.

INITIAL FINDINGS

Most of the 219 museums selected for the analysis are art museums (78,5%) in English-speaking countries (USA 50,2% and UK 25,6%), which hold collections of paintings (86,8%), sculptures (77,6%) and photographs (51,6%).

More than half of the museums analyzed have some kind of searching engine, but this still leaves a high percentage of those with no searching tool for the collection (44,3%). One out of seven museums only has a simple searching tool (16,4%), while one out of twenty offers advanced (5%) or complex expert search (4,1%). However, one third of the museums studied (30,1%) combine these searching tools in some way. The most common combination is between the simple and the advanced search, with only a few museums combining those two with the complex expert search. Nevertheless, nearly all of them offer the possibility of only searching by typing free text (94,3%) (Fig.5).

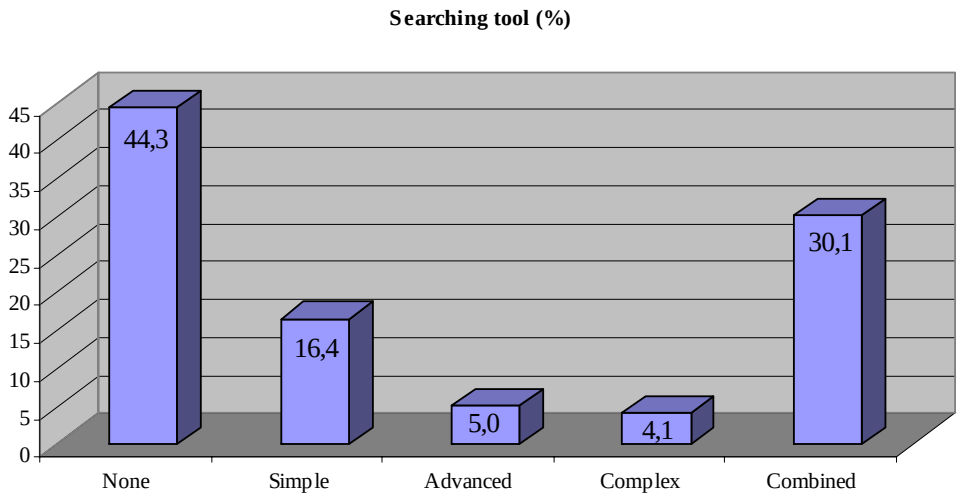

Figure 5: Types of searching provided on the museum websites analysed

Regarding the way of presenting the digital contents of the museum, there are many differences among the museums studied. Three out of ten museums present only a browsable catalogue of their collections (29,7%), while one out of five museums have some kind of searchable database (18,8%). However, more than half of the museums have both a browsable catalogue, as well as a searchable database on their website (51,6%) (Fig. 6).

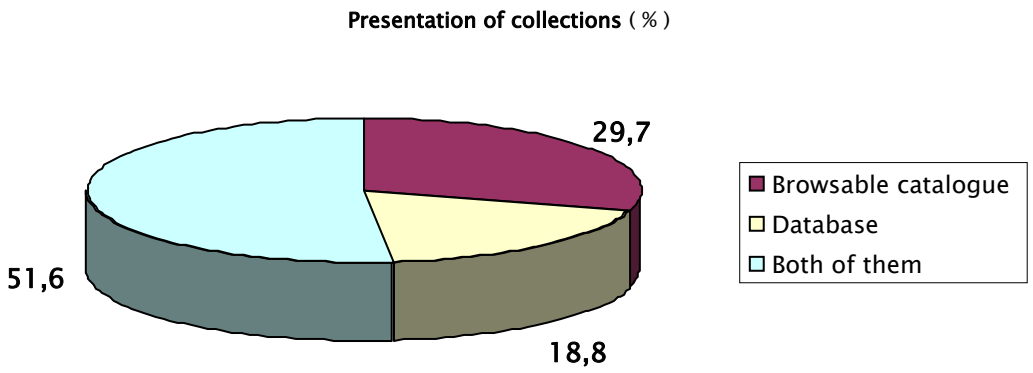

Figure 6: Type of presentation of online museum collections on the websites studied

In terms of the amount of the collection presented, four out of ten museums present only highlights of their collections (38,4%). A slightly lower percentage present a large part or the whole collection online (34,6%). Moreover, one out of four museums provide online access to both collection highlights, as well as to a big part or the whole collection (27%) (Fig.7).

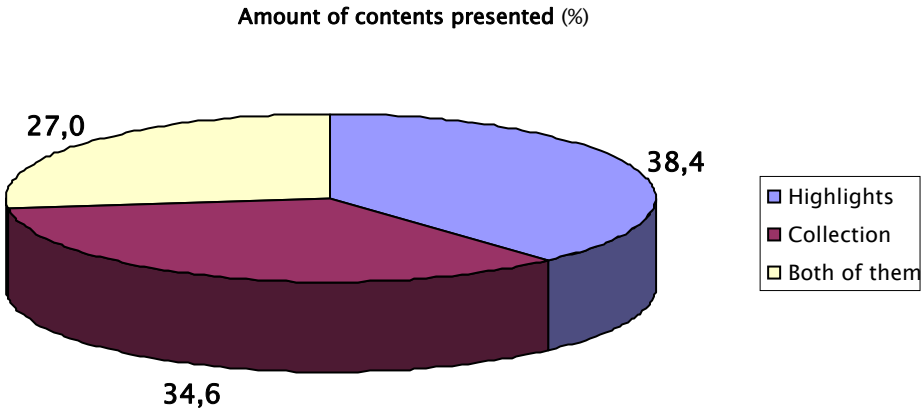

Figure 7: Amount of digital contents presented on the websites studied

Considering the format of presentation of the digital contents, nearly all of the websites examined show an image of the object (95,0%) and nine out of ten have some information label (91,3%). More than half of the museums also provide some explanatory text about the objects (52,3%) and four out of ten present some details about the artist or creator (39,9%). One third of the museums incorporate the possibility of zooming in on the image of the object (32,1%) and one out of ten offers some contextualization of the object or a link to related works (10,1% in both cases). Only one out of seven of the museums providing explanatory texts present also some kind of contextualization of the object (14,9%) (Fig.8).

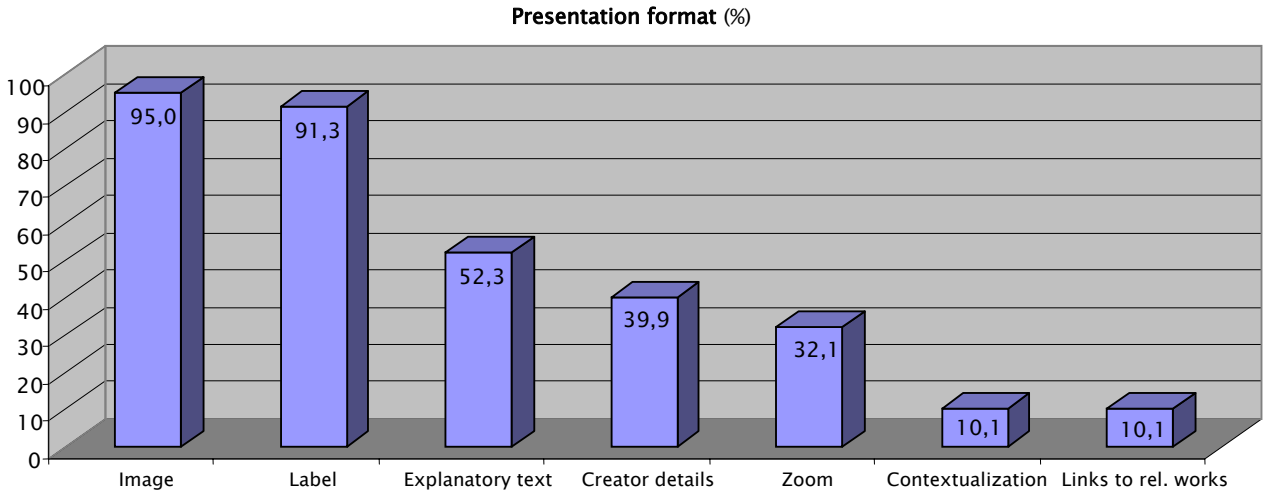

Figure 8: Format of presentation of digital collections

The analysis of the results by country of origin and type of institution has also highlighted some interesting findings. On the one hand, British museums are the ones that present a higher percentage of searching tools with half of their websites combining different kinds of searches (46,2%), while in Germany (75%) or Spain (61,3%) most of the institutional websites do not have any searching tool. Moreover, two thirds of the British museum websites studied provide access to their collections databases (67,9%).

Examining the data by type of institution, the analysis has shown that more than half of the history museums have a browsable catalogue on their website (53,3%) and not any database. On the other hand, half of the anthropology museums have some kind of database (50%), while three fourths do not have any browsable catalogue. None of the anthropology museums examined presents any highlights of the collection on its website, while half of the history museums (46,7%) and two thirds of the art (64,5%) and the archaeology ones (66,7%) include some collection highlights. The presentation of collections is more balanced, because half of the archaeology museums (50%) and six out of ten art (60,5%) and history museums (60%) have an online presentation of a large part or the whole of their collection. It is interesting that all anthropology museums provide web access to the whole or to a large part of their collection.

GROUPING OF THE MUSEUMS

The analysis of the results shows that we can distinguish some different groupings among the museums websites. First of all, the two main groups were identified according to the presence or absence of an advanced searching tool on the site.

The first group is the one with no searching tool (80,2%) or a simple one (19,8%). One out of four museums in this group have some kind of browsable catalogue (27,3%), while online databases are rare (5,8%). Seven out of ten museums present their highlights on the web (71,1%). The presentation of their contents is done by images (98,3%), labels (87,6%) and to a lower degree by explanatory texts (52,9%) or creator details (29,8%). One out of five museums offer users the possibility of zooming in on an object's image (20,7%). However, within this group, we can identify another two different subgroups, mainly related to the presentation of the collection.

- Group 1a: This subgroup has the simplest web presentation of the collection, mainly some highlights with images and labels.

- Group 1b: In this subgroup, museums make their entire collection (or a large part of it) available online to users, even though the way of presenting the contents by images and labels is similar to that of the previous subgroup. The collection here can only be browsed.

The second group is the one providing advanced (12,8%), complex (10,5%) or combined searching tools (77,9%). Nearly all of the museums in this group provide some form of an online database presenting their collection (91,8%) and three out of four have also some form of collection catalogue (77,9%). Six tenths present only the highlights of the collection (55,8%). The contents are mainly presented with images (91,8%) and labels (98,8%) and half of the museums of this group use explanatory texts (52,3%), creator details (55,8%) and the zooming option (48,8%). Moreover, one out of six provide some contextualization of the objects (13,9%) or links to related works (17,4%). Within this group, we can also identify another two different subgroups:

- Group 2a: This subgroup includes websites with mainly digital databases (88,5%) and in some cases also browsable catalogues (40,3%). The presentation of contents presents a slightly higher degree of complexity with creator details and zooming options. However, the presence of highlights (28,8%) is quite low.

- Group 2b: Finally, this group is the most complex one. It uses browsable catalogues (in all cases) and digital databases (97,1%) to present highlights (97,1%) as well as the whole of the collection (91,2%). They offer the possibility of a simple browse or a deeper search of the contents. Similarly, the presentation of the contents is also the most complex one, because it embraces from the most simple images and labels to more elaborate links to related works and contextualization of the objects.

	Highlights	Collection	Browsable catal.	Database	Image	Label	Explanatory text	Creator details	Zoom	Context.	Links to related works
Group 1a	X		X		X	X					
Group 1b	X	X	X		X	X					
Group 2a		X		X	X	X	X	X	X		
Group 2b	X	X	X	X	X	X	X	X	X	X	X

Figure 9: Features of the different website groups

For the second stage of our research, we plan to contact the museums belonging in the last two subgroups, Group 2a and 2b, for more in-depth study of the use of their online databases by the end users.

CONCLUSIONS AND FURTHER IMPLICATIONS

During their long history, museums have been constantly evolving adapting their reality to their times. More recently, trying to readjust to the current needs of cultural users, they have been using innovative technological applications to make their contents available to their multiple visitors. One of the most frequently used technologies is the Internet, which has fostered the multiplication of museums' institutional websites. Even though the application of web technologies is a common trend, the ways that these have been applied to the current context of museums are quite diverse.

In the museums we studied there are some common trends in the presentation of their digital collections. Nearly all of them provide at least an image and a brief label about each object. On the other hand, one of the characteristic differences among museum websites is whether there is any kind of searching tool or not. Those who do not have any searching tool tend to allow only the browsing of their contents, whether of the whole collection or only some highlights. Moreover, we can identify a clear relationship between the presence of databases and searching options, due to the fact that nearly all the websites presenting the collection through a database have some kind of searching tool, independently of the degree of the search (simple, advanced, complex or combined). Additionally, museums can be grouped depending on the presentation of their collection into the simpler ones, presenting browsable highlights with a few data about the objects, and to more complex ones, which allow different degrees of searching

of the institutional database and present more complete, precise and contextualized information about the objects, supporting individual learning by the end user.

This first stage of the analysis identified some trends and models on the presentation of digital contents. What remains to be carried out now at the second stage of our research is the study of the real use of digital museum collections by their virtual visitors. This will include both the quantitative analysis of web logs from specific case studies, together with qualitative evaluation with target user groups. Apart from taking into account different communication and learning paradigms, it is also import to listen carefully to what the actual users have to say and examine how they actually use these valuable but in some cases underused resources and tools. Studying the diverse users of the digital collections, we can meet their needs more closely and plan more effective future strategies for the digital curation of cultural heritage.

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