The "Virtual Museum"[1]: New Perspectives For Museums to Present Objects and Information Using the Internet as a Knowledge Base and Communication System

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Abstract

The relationship between museums and mass media as well as the possible impact of information technology on museums are described. The "virtual museum" is defined as a means to establish access, context, and outreach by using information technology. The Internet opens the "virtual museum" to an interactive dialog with virtual visitors and invites them to make a virtual museum experience that is related to a real museum experience. Some research is described on how the Internet can be used as a knowledge base and trends from surveys how museums and virtual visitors use the Internet as a communication tool.

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[1] In this paper the term virtual museum is used in quotation marks because to my knowledge there exist no accepted definition and the term in itself is an oxymoron.

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Zusammenfassung

Die Beziehung zwischen Museen und Massenmedien wird ebenso dargestellt wie mögliche Auswirkungen von Informationstechnik auf Museen. Das "virtuelle Museum" wird definiert als ein Mittel, das mit Hilfe von Informationstechnik Zugang, Kontext und Kontaktaufnahme zu Besuchern ermöglicht. Das Internet öffnet das "virtuelle Museum" für einen interaktiven Dialog mit virtuellen Besuchern und lädt sie ein, im "virtuellen Museum" Museumserfahrungen zu machen, die mit dem realen Museum in Beziehung stehen. Es wird berichtet, wie Museen und virtuelle Besucher das Internet als Knowledge Base und Kommunikationsmittel benützen.

1 Introduction

Internet has become a household word. Even institutions with more conservative attitudes towards information technology such as museums start to recognize the possibilities it offers for the dissemination of information to a world wide public. The interest in the application of interactivity and multimedia in the museum community was stated in the *International Conferences on Hypermedia and Interactivity in Museums* (ICHIM) which started in 1991. For a lot of museums the next step was to establish a presence on the World Wide Web and bring their collections on the Information Highway. More and more museums are interested in using the Internet and in sharing their experiences. This is shown in the annual conference *Museums and the Web* which was established in 1997. In this situation it is necessary to ask what new perspectives information technology can offer to museums for presenting objects and information and how the Internet can be used as a knowledge base and communication system.

This paper intends to show some perspectives from museology and information science literature and it also discusses the question stated above, referring especially to the art museum. This kind of museum is of special interest because in the art museum the object has a status as a work of art and curators often think it speaks for itself and no additional information is necessary whereas the public would appreciated background information in order to understand the museum objects. As a start it is necessary to take a look at the relationship between the museum and the mass media. Researchers have found out that there exist some interesting parallels.

2 Museums and Mass Media

Museums are institutions with a lot of facets depending on the topics they deal with, e.g. art, culture, history or science to name just a few. Therefore a definition for "museum" can only refer to the general aspects that all museums have in common. Burcaw (1975), for example, offers ten definitions collected from different authors and museum organizations. According to Burcaw (1975, pp. 9f), a museum can be defined as a nonprofit institution that collects, preserves and displays objects for educational or aesthetic purposes. By definition, a museum is

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bound to physical objects. But at the same time it has the function of communication and dissemination of knowledge, a mission stated as early as 1846 when the Smithsonian Institution was founded "for the increase and diffusion of knowledge among men" (Waidacher 1993, p. 98).

Dealing with the communicative function of the museum, some researchers think that there are interesting parallels between museums and the mass media. Sharon MacDonald (1996, p. 5) emphasizes that "museums clearly have much in common with other institutions and media". According to Roger Silverstone (1988, p. 231), "museums are in the communication business" and offer a display of objects and artifacts which has been designed to educate, inform and entertain. Silverstone (1994, p. 162) further states that "museums are in many respects like other contemporary media. They entertain and inform; they tell stories and construct arguments; they aim to please and to educate; they define, consciously or unconsciously; effectively or ineffectively, an agenda; they translate the otherwise unfamiliar and inaccessible into the familiar and accessible." Relating these tasks of the museum to mass media culture of the late twentieth century Silverstone asks what kind of medium the museum is and how museums relate to and participate in electronically mediated culture (1994, pp. 161f). The problem in answering this question is, according to Silverstone, that there are obvious differences between museums and broadcast media such as newspapers, radio or television because museums occupy physical spaces, contain objects and encourage interactivity while they allow the visitor to wander through their exhibits. This range of interaction is not available to broadcast media that can only mediate between spaces but do not offer control (Silverstone 1988, p. 235).

Although there are differences in the degree of interaction between museums and broadcast media, there are striking parallels in behavior between museum audience and mass media audience as the research of the sociologist Heiner Treinen (1980; 1993) shows. Treinen has identified a kind of behavior that people visiting museums and people using mass media have in common. He calls it the phenomenon of "active dozing", a purposeless, planless activity that looks for gaining and maintaining permanent stimulation/diversion (1993, p. 89). In museums "active dozing" appears in the form of "cultural window shopping", which means that "visitors behave as if museums were mass-media: they linger in particular in front of objects with which they have already, before the museum visit, had something to do. As long as they know something about the category of objects and thus about the structure of the display, then a few glances may suffice to check off a few points, to stimulate thought, to supplement knowledge. Everything else is simply 'taken on board', or treated as mere diversion" (Treinen 1993, p. 90). This indicates that most museum visitors do not get the full value out of their visit and that museums could be more attractive to visitors if they would provide more information and entertainment or a combination of both - edutainment. Especially the combination of information and entertainment is important because museums are in competition for visitors with other leisure pursuits and mass media (MacDonald, Sharon 1996, p.1) that use information technology extensively in order to become attractive to the audience. George MacDonald and Stephen Alsford (1995, pp. 129f) describe how museums compete with theme parks for recreational and leisure-time activities and how they

adopt certain means usually applied by theme parks to attract visitors. Their conclusion is that there are new structures in communication and learning that create a dynamic interplay between the two and that both will pursue their special ways of presenting and interpreting information (1995, pp. 143-145).

3 Museum Information and Information Technology

In the 1980s a shift of paradigms happened in museology: the importance of objects was questioned in favor of the importance of information (Pearce 1986). Scholars like Wilcomb E. Washburn suggested that the emphasis of museum work should be put on information rather than on objects (1984, pp. 14f), others like George MacDonald and Stephan Alsford (MacDonald/Alsford 1989, MacDonald/Alsford 1991, Alsford 1991, MacDonald 1992) described the museum as an information utility going as far as stating that museums need to think of information, rather than of material objects, as their basic resource (Alsford 1991, p.8). Finally museums were no longer thought of as being repositories of objects only but as "storehouses of knowledge as well as storehouses of objects" (Cannon-Brookes 1992, p. 501; Hooper-Greenhill 1992, pp. 3f).

An important issue related to that shift of paradigms was the growing importance of museum education and visitor studies. A number of studies on visitor interests were conducted like those of Melora McDermott (1988) and the Getty Center for Education and the Arts (1991). The findings of these reports showed that the visitors thought information to be important for the appreciation of museum objects in general and for art in particular. If they do not get this information, visitors lack the key to the understanding of museum objects and they cannot connect to the object. Therefore they behold the objects for a few seconds only (Treinen 1996, p. 65). As Laura Chapman states (1982, p. 48), the myth that "objects speak for themselves" forgets that the meaning of an object is learned and established by the context. The importance of context and how it is communicated is also emphasized by Treinen (1996, p. 65) who reasons that communication is the key to the understanding of the museum object. Instead of only presenting objects, museums have to create meaning and establish context. This shows that an important aspect of the museum is to connect visitors, objects and information, an idea for which Glen H. Hoptman has introduced the term connectedness.

According to Hoptman (1992) connectedness is the basic feature of the "virtual museum", as it seeks to describe the interrelated and interdisciplinary presentation of museum information with the help of integrated media. Connectedness is the quality that allows the "virtual museum" to transcend the abilities of the traditional museum in presenting information. This new quality can be realized in different ways, for example, in displaying digital representations of works of art next to comparative works by the same artist, artists who have influenced him or her, or works of the same style or period that are exhibited in museums at various geographic locations or that are otherwise not normally accessible together. Hoptman's concept of connectedness coupled with the following quote shows the value of the "virtual museum":

> The concept of the Virtual Museum demonstrates how limitations imposed by the traditional method of organizing and presenting information can be overcome in the context of museum visits. In a nutshell, the Virtual Museum provides multiple levels, perspectives, and dimensions of information about a particular topic: it provides not only multimedia (print, visual images through photographs, illustrations or video, and audio), but, more important, it provides information that has not been filtered out through these traditional methods (Hoptman 1992, p. 146)

Connectedness does not merely mean to link objects together but to give visitors the opportunity to focus on their special interests by pursuing them in an interactive dialog with the museum. This is an important step in the development from the traditional museum to the museum of the future, as Hooper-Greenhill (1994, pp. 134) emphasizes: the museum changes from a "collection-driven museum" to an "audience-driven museum" that tries to relate to particular visitor groups and to focus on the visitors instead of the collections they visit. Ben Davis (1994, p. 70) reaches the same conclusion when he states: "The digital museum can be visitor-centered rather than curator-centered."

An important step towards the "audience-driven" or "visitor-centered" museum is that museums try to reach out to their prospective visitors. The possibilities of outreach that telecommunication services offer for the museum to link with its visitors are emphasized by several researchers (Anderson 1997; Argoski 1995; Bearman 1995a, 1995b; Bowen/Bennett/Johnson 1998; MacDonald/Alsford 1997). For them, the Internet seems to be the ideal knowledge base and communication system to achieve this goal. The World Wide Web offers the possibility to link text, images, sound and video to an interactive hypermedia setting which promises interesting opportunities for museums to present objects and information and offer remote access to their collections. This will have a deep impact on the traditional museum. Both Maxwell L. Anderson (1997, p. 27) and George MacDonald and Stephan Alsford (1997, pp. 267f) think that the museum will combine its role as a repository with the use of telecommunication technologies adding a new, digital dimension to the traditional museum. This digital dimension will lead to a new form of museum that enriches the objects with information: the "virtual museum".

4 The "Virtual Museum" and the Opportunities it offers

The idea of the "virtual museum" is currently under construction. In the museum and information science literature a variety of terms are used synonymously for museum-related digitized information resources, e.g. electronic museum, digital museum, on-line museum, hypermedia museum, meta-museum, Web museum, and Cyberspace museum. All these terms share the concept of digitized museum information that is brought together in an online-accessible collection.

A well-known definition for the "virtual museum" was presented by Geoffrey Lewis (1996, WWW) on the museum discussion list "museum-l" and in the Article Section of Britannica Online, the Internet version of the Encyclopaedia Britannica. Lewis described the "virtual museum" as

a collection of digitally recorded images, sound files, text documents, and other data of historical, scientific, or cultural interest that are accessed through electronic media. A virtual museum does not house actual objects and therefore lacks the permanence and unique qualities of a museum in the institutional definition of the term. (Britannica Online, Article Section, 1996)

Lewis emphasized the important difference between the traditional museum and the "virtual museum", i.e. the real and the digital object. Related to this is the lack of unique qualities to which Walter Benjamin refers to as "aura" in his famous 1936 essay "The Work of Art in the Age of Mechanical Reproduction". As the research of M. Travis DiNicola (1995, WWW) shows Benjamin's essay is relevant for the digital reproduction of works of art. The heated discussion on "aura" in the museum literature gives proof of a dispute between progressive researchers who grant digitally reproduced objects a kind of auratic quality (DiNicola 1995, WWW; Douglas Davis 1995, p. 381-385) and traditionalists (Schäfer 1995, pp. 75f; Mitchell/Strimpel 1997, p. 32) who refuse to grant it.

This aspect may be important for the museologists and specialists but not so much for the common museum visitors. The research of John Falk and Lynn Dierking (1992 p. 2f) shows that from the visitor's perspective the museum experience consists of three contexts: the personal context which incorporates a wide range of personal experience, knowledge and motivation; the social context which refers to the social environment in which the visit happens; and the physical context which relates to the architecture of the building as well as to the objects contained within. As Falk and Dierking (1992, p. 13f) emphasize the "decision to visit a museum involves matching personal and social interests and desires with the anticipated physical context and the associated activities of a museum" and that visitors want to see content in context. But as stated earlier in regard to Treinen's theory of "cultural window shopping", most museum visitors do not get the full value out of their visit. In this context, the research of Falk and Dierking (1992, p. 37) offers an interesting insight: the visitor's museum experience highly depends on expectations of the visitor and how closely they fit to the visitor's museum agenda and the actual museum experience. If the visitor has "informed expectations" about the museum visit, there will be a close fit between the expectations and the actual visit. Eventually this will lead to a positive, reinforcing attitude about museums.

All these arguments lead to the question that is crucial to the "virtual museum": "Any discussion of virtual museums must begin with the question: Is it possible for the patron to have a meaningful or 'real' experience visiting a 'virtual' museum?" (Argoski 1995, WWW). This question is partly answered by Falk and Dierking (1998) and Lynne Teather (1998). Falk and Dierking (1998, p. 8f) draw parallels between museum-going and visiting museum Web sites and suggest – based on the modest research that is available – that creating a Web experience is as complex a behavior for virtual visitors as museum going because both are centered on free choice learning. Teather refers to the "user-created experience of museums", as she calls it and states (Teather 1998, p. 6) that "the essence of the museum experience that we wish to transfer to the web [...] is about meaning and

knowledge building that is based in the visitor". According to Teather, the museum experience – both the real and the virtual one - is centered around meaning making of the visitors, something for which they need information. But while Teather values information, she doesn't support "a philosophy of information for information's sake" (p. 8f) but a philosophy of concepts. The idea of concepts is especially important because access to the information is not enough as Kevin Donovan (1997, p. 128) points out. He argues that "access to much of our on-line sources is of little value because museums add so little value to the data they provide". The object data with no value added are not useful for those who can not interpret and analyze it. Therefore Donovan (1997, p. 130) suggests that museums should give up their object-centric manner in the electronic space because the object is only available in a surrogate form. Instead they should present stories of the culture, historical context, people and places the object is related with. This leads back to Hoptman's concept of connectedness.

Taking all these ideas into account the "virtual museum" can be defined as follows: The "virtual museum" is a logically related collection of digital objects composed in a variety of media, and, because of its capacity to provide connectedness and various points of access, it lends itself to transcending traditional methods of communicating and interacting with the visitors being flexible toward their needs and interests; it has no real place or space, its objects and the related information can be disseminated all over the world.

This definition follows the research of James Andrews and Werner Schweibenz (1998) and describes the "virtual museum" essentially as a museum without walls, as Bearman (1992, p. 126) calls it. This "virtual museum" opens itself to an interactive dialog with visitors offering them connected digital objects and information that is readily accessible from outside the museum. At its best, the "virtual museum" connects the visitors with valuable information across the entire globe and gives them a dynamic, multidisciplinary and multimedia approach to the collection as Jamie McKenzie puts it (McKenzie 1997, WWW). The idea is not a new one, it was already described in a scenario presented by Allon Schoener (1968, p. 364) at the 1968 *Conference on Computers and their Potential Application in Museums.* Now the Internet offers the possibility to realize it.

5 The Internet as a Communication and Knowledge Base for Museums

The prerequisite for the "virtual museum" are digitized data. Therefore it is important that museums "recognize that the methods of information processing and delivery in the next century will be digital, and they should begin now to build digital image and knowledge bases reflecting their holdings and the contexts of the creation, discovery, use, and meaning" (Bearman 1992, p. 135). This is necessary because the collection of the "virtual museum" consists of those objects only that are documented in the museum's databases and not of those held in its storerooms, therefore undocumented or inadequately documented objects are lost to the virtual collection as Bearman (1995a, p. 21) states. In the long run, Bearman argues, the difference between having objects "on exhibit" and "on display" will diminish and the whole collection will be accessible online all the time. The goal

will be, according to Argoski (1995, WWW), that the information collected by the museum will "be reused in a variety of ways and through different media". Argoski calls this "repurposabilty" and thinks it of prime importance to the "virtual museum".

The Fine Arts Museums of San Francisco (FAMSF) offer an interesting perspective of how digitized museum information can be used in different contexts. A huge part of the museums' holdings are digitized in the imagebase "The Thinker" (URL = http://www.thinker.org/imagebase/index.html) which contains over 70,000 images and related information (for details see Schweibenz 1998). The museum staff uses the imagebase to plan exhibitions, researchers who visit the museum use it to select works of art they want get from storage, visitors access information on objects while visiting an exhibit, and virtual visitors visit the imagebase on the Web. The next step is to combine the collection in "The Thinker" with that of other museums in the digital library of the *Art Museum Image Consortium* of which the FAMSF is a member.

The *Art Museum Image Consortium* (AMICO, URL = http://www.amn.org/-AMICO/) is a consortium of 23 North American art museums that was founded in October 1997. The members plan to set up an Art Museum Image Consortium Library that shall contain the documentation of over 20,000 works of art by the end of the year 1998 and be twice the size in 1999. The AMICO Library consists of multimedia documentation of works of art, including digital images, collection data, curatorial records, scholarly research and educational material. In general the images will be high resolution pictures (1024 x 768 pixels in 24 bit color), some images will be available in resolution up to twenty times the minimum, allowing a zooming function. Sample records are available on the AMICO Web site. The AMICO Library will be licensed to educational institutions (K-12, universities, museums, and public libraries) and the revenue is shared by the members and used to meet the AMICO technical specifications.

The AMICO Library can be regarded as an example for a "virtual museum" that invites visitors to make a virtual museum experience. It fulfills the predictions of Howard Besser who speculated in his 1987 article *The Changing Museum* (Besser 1987, p. 14) that the role of the "museum will change from a static repository of information (akin to an archive) to a more dynamic, interactive information source (more like a library)", changing public perception of the objects they store. Museums will become more accessible and more democratic as a wider public gets involved (Besser 1987, p. 16f). Besser argues that the museum is a tightly controlled environment has limited hours, admission fees, and an elitist way of looking at art. But things change with the advent of information technology which allows increased access and interactivity. This will shift the museum from being a passive repository to a more active role. As Roland Jackson et al. (1998, p. 1) point out, "the capacity of the Internet, synchronous and asynchronous, makes it possible to make contact and develop long-term relationships with the public". Another example is the Virtual Reference Desk (http://-www.nmaa.si.edu/ref_desk.html) of the National Museum of American Art (NMAA) where the reference librarian answers questions from researchers and laymen from all over the U.S. The virtual reference desk was intended as a facet of interactive features which included online chats, message boards, entertaining

contents, suggestion boxes and the digital reference service. These features were thought as a means to interact with the audience in order to find out what museum services they most wanted, as Joan Stahl, the reference librarian of the NMAA, puts it (Stahl 1998, p. 11). The electric reference service is well accepted as the average of approximately 350 questions per month shows, the users range from students to artists and professionals both inside and outside the art fields (p. 11f).

Other ways of using the Internet as a means of communication are described by Jonathan P. Bowen, Jim Bennett, Jim and James Johnson (1998, WWW) who did some research in how museums have been using the Internet and how they could use it in the future. They sum up several reasons why museums should use the Internet:

- Maintaining a presence on the Internet provides the potential for worldwide publicity.
- The Internet offers fast and convenient communication with both colleagues and the public.
- Virtual exhibitions can mirror and keep up actual exhibitions in the galleries. This is what around three quarters of virtual visitors expect to find at museum Web sites. Moreover virtual exhibitions allow access to material that is otherwise not available.
- The Internet offers an alternative, cheap, and complementary form of information provision and is likely to act as a draw for prospective visitors who would like to see the real thing.
- The Internet offers remote access to scholarly research of collections in online databases.

The research of Bowen, Bennett and Johnson shows that the Internet can be a useful tool for communication with the audience. But there is only little research available both on how museums and virtual visitors use the World Wide Web.

Stephanie James (1997, WWW) has done a survey on how museums use their Web site which included 33 museums around the world. For 30 percent the rationale behind the creation of the Web site was promotion/marketing, for 19 percent to have a presence on the Web, and for 11 percent it was educational reasons. Over times the purpose has evolved with 73 percent of the participating museums and shifted away from the promotion/marketing emphasis. Now for 38 percent the emphasis is now greater access to collections, for 23 percent greater educational focus, for 15 percent increasing interactivity. At the same time 54 percent of the participating do no web-visitor research at all and 14 percent do hit counting. Only 23 percent investigate the length of visit and the pages looked at. This shows that there is still a lot of research to do for museum and information science professionals.

While visitor studies are an emerging discipline in the Anglo-American museum world, research on virtual visitors is still a comparatively new field. Katherine Futers (1997, WWW) presents the data of a survey conducted by Rachel Reynolds, a museum studies student at the Leicester University. According to this survey 88 percent of the virtual visitors are based in North America, women make up 46 percent of them and the average age of museum web page visitors is 40 to 64 years of age. 74 percent of the virtual visitors expect to find online exhibition on

museum Web pages, 87 percent expect images and 52 percent want to download these images – a nightmare for most museums' copyright concerns. Currently a survey of a student of the University College London is going on (International Internet Museum Survey Questionnaire http://geocities.com/SoHo/Museum/8355/). How virtual visitors use the World Wide Web and what they expect to find there will hopefully soon become an evolving field for visitor studies.

These survey data can only indicate trends but they give hints how the World Wide Web can evolve to a communication system between museums and visitors. These data are supported by the hit counts of Web catalogs that offer access to museum Web sites. An example is the site *Museums around the world* of the International Council of Museums (http://-www.icom.org/vlmp/world.html) respectively the *Virtual Library of museums page* (http://www.comlab.ox.ac.uk/-archive/other/museums/) both maintained by Jonathan P. Bowen. Bowen has counted more than 2.5 million visitors since the sites were established. Bowen's statistics (Bowen 1995, p. 38f) show that museum information on the Web is on the par with American Football. This means that museums on the Web are doing reasonably well as far as the numbers of visitors are concerned.

6 Conclusion

The use of telecommunication technologies offers interesting perspectives for museums and the opportunity to add a new, digital dimension to the traditional museum, thereby creating a "virtual museum". The foundations for the "virtual museum" are already laid. Bearman (1995b, pp. 15f) estimates that by the end of this decade over 20 million original objects will have been digitized. In this way, museums and the digital information they offer will become loadstones of content for the growing multimedia industry and for museum initiatives for outreach to the public (Bearman 1995a, p. 12). As some statistics and research suggest, the public looks for and appreciates museum information on the Internet but has high standards that the museums have to meet. The Internet is a great opportunity which the museums should use to broaden its audience. So there is a piece of advice for museums concerning the Web: "Be there or be square!"

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