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From strategic presentation to dynamic interaction

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E-LEARNING . E-COLLABORATION

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SUMMARY . ABSTRACT

On the integration of www based information systems into the daily research and teaching practices of Art History departments. The online presentation of Art History departments in conventional HTML format is becoming a vital forum for the key research and teaching information. A www-project at the Art History department of the Humboldt University, Berlin shows the potential of how dynamically generated HTML information and course content can contribute to achieving the goal of incorporating www based publication tools (seamlessly) into the daily workflow.

Art History and its Media

The academic subject Art history has changed greatly, in its attitude towards the usage of medial research and teaching equipment. Managing the digitalization and networking of text and image collections is becoming a daily occurrence, within the research and teaching practices. The transformation of the medial aspects of research and teaching aids means more for the subject Art history today than perhaps for any other discipline, as the objects of analysis in Art Historiography present themselves less as original objects, but as their medial representations. The technologically reproduced image has been the central medium of the subject Art History since its establishment in Universities, in both research and teaching practices. It is now more than 100 years, since the acceptance of Photography as an “objective” reproduction method and its integration in the discipline Art History, more than 6 decades after its invention, and only after overcoming various forms of resistance and controversial discussions. The arguments against introducing photography were dominated by the criticism of the industrializing of pictorial production, as well as the fear of losing the aura of the original. Exactly how the technical reproduction changed the habits and methods of seeing pictures, alone in terms of quantity and therefore quality, remained unknown, at that time. Only after the Natural Sciences awarded the media Photography its objective quality, could it assert itself into the work of Art Historians.

Bruno Mayer As the Art Historian *Bruno Mayer* presented a technical apparatus called a Skioptikon at the Art Historians Congress in 1873 in Vienna, his slide projector was gazed at with curiosity. It required an Art Historian with the prestige of*Herman Grimm*, since 1873 first full Professor for Art History in Berlin, to assist the *Skiopikon* in 1900, to general recognition. Grimm compared the Skioptikon to the natural scientists microscope, and regarded it as method of testing the quality of an artwork. He heralded the possibility, with help of the photo-

graphy, to be able to see things, normally hidden to the human eye. Grimm saw great use for this new technical gadget in simultaneously visualizing artwork with the large audience of his lectures.

Since the establishment and general acceptance of the slide projector and photography in Art Historical methodology over 100 years ago, the static slide has become the exclusive, adequate means of presenting Artworks. Seen in former times as a mere optical tool, its perception has changed over time to become a „discursive machine“ (Donald Preziosi), the technical gadget “slided“ its way into Art Historical methodological awareness.

The Digital Challenge

The emergence of digital media and modified communication and information processes in the classical teaching forms, such as seminars and lectures are, for a predominantly image orientated teaching discipline such as Art History, a challenge not to be underestimated.

New perspectives The rash development of the information technologies together with the increased usage of image editing and presentational systems occurred parallel to the opening of the subject Art History to becoming a pictorial science and consequentially an interdisciplinary subject. New genres such as Film, Photography and computer aided Art, Art of Virtual Realties and Net Art have been incorporated into the subject’s repertoire. It is not possible to adequately portray, or transport these genres medially with the conventional media used in Art History. New computerized forms of visualizing and structuring knowledge and its distribution over the Internet are necessary.

see also the corresponding political manifest of the BMBF.

Bundesministerium für Bildung und Forschung (BMBF): *„Anschluss statt Ausschluss“. IT in der Bildung*. Reihe „Innovationen Wissensgesellschaft“ (BMBF Publik), Berlin August 2000.

Education-Political Requirements

At the latest, since popularization of the global network “Internet” in form of the *World Wide Web* (WWW) the media-theory formulated aspect of the digitalization of information provided for educational reasons, becomes a concrete everyday occurrence, first of all in the area of educational politics: the *BMBF* (Federal Ministry of Education and Research) for example, published a brochure, in the year 2000, on the strived fields for the usage of information technology in Universities, in which it creates a scenario that directly refers to oncoming changes as regards content and methods of gaining and providing knowledge. Besides an “extension of IT infrastructures within Universities” the central points are mainly

- The development of new *teach- and learning concepts*
- The development of *content software* for University teaching.

Ubiquitous computing Because of the factual omnipresence -and thereby continuous availability - of net-based functions, the BMBF forecasted a forming of new learning methods at University as well as the emergence of information technology into everyday lives. Ideally, students should then have the possibility to dial in to the network from any point on campus and thus access their learning and teaching software. The high-speed connections of such a *next generation Internet* make it possible for teaching staff and students to work with dozens of output devices. Video technology will become a widespread presentation standard and th wireless world will make “being online” possible, at any time, anyplace and anywhere.

Problem Evaluation

Referring to the educational political expectations of the BMBF, the situation for the representative average Art Historical institutes presents itself as follows:

1. Extensive www- i.e. intranet based IT infrastructures do not exist as yet or only in an initial stage. Even though most Institutes present themselves in WWW with their own homepage and insure their actualization. But the usage i.e the provision of dynamic resources occur, in most cases using external services for example the picture archive "Foto Marburg" or in the future digital picture archive "Prometheus".

2. Concepts, which put a methodologicial-didictaial emphasis on the provision of online course material, under terminologies such as "distance learning", "tele-teaching" or "virtual campus", are not (yet) a common integral part of teaching. Presence teaching is still the dominant method of knowledge provision.

see also.: Thomas Lackner, Ingeborg Reichle, Dorothee Wiethoff: *Neue Medien in der Bildung: Chancen und Herausforderungen kooperativen Lehrens und Lernens in der Kunstgeschichte*. In: Kritische Berichte, Heft 3/2000, p. 87-90.

Regarding 1: Statically created institute homepages are (Media-) historically marked by a „medial disruption", which could be described as an unwanted interruption in the Institutes internal information workflow: the intention to provide staff, students and other targeted groups at the Institute with an up to data online-service originated from the early days of the WWW (approx. 1994/95) as a useful extension of the printed publication. The practice demonstrated, that the necessity of regularly editing static HTML pages was either connected with a substantial time and personal effort, or could only be realized at the expense of content, actuality or Layout quality.

The „medial disruption" resulted from a personal, time and place division of the publication assignments: while the Institute's secretarial office is responsible for the maintenance of the "pin board" (aspect: actuality) as well at the half yearly creation of the Lecture Directory (aspect: document creation), A HTML assistant actualizes the WWW-content. Printed version and online information run parallel on two, medially and logistically different tracks, often drifting away from each other as a result of an a synchronicity of information.

Regarding 2: Distance learning plans, within the framework of the institutional teaching and learning process can be only treated as an optional service, as an additionally provided initiative supporting the presence teaching. Tele-learning course units serving an autonomous private study (as evening classes or job accompanying long distance course) are not conceivable within this context but web based bulletins boards, chat rooms and electronic mechanisms for the automatic online distribution of thesis papers, presentations, seminar protocols, etc. These are interactive attractions, which can be implemented seamlessly into the overall concept of an Institutes homepage. They can and should be used from teaching staff and students, equally.

Conceptual prerequisites of a WWW based Information system

Considering the education-political targets described above, leads to, regarding the introduction of www based infrastructure in Art Historical (and humanity) Institutes, the following requirements on an interactive system, which will eventually substitute the "static" homepage and allow the accompanying academic event interaction:

- The conception of the online content has to be set as a system, which is capable of providing digital content and content segments (text, pictures and video files, the so-called content) independent of the medial output format of a website. It should be possible to create print, online or hybrid documents, for example PDF files, at any given time from the same, media neutral data source. In this manner, it should be possible to forward created documents to interested parties using a subscription system.

- It should be possible to update the online content de-centrally: Institute staff without HTML skills, should be in a position to edit independently particular areas of the In-

stitute's WWW content. The conditions for which being a password and username administration, which allows an individual allocation and control of personalized access to editable content areas.

- It should be possible to distribute documents "top-down", from Institute to the Students, "down-top" from Students to teaching staff as well as "across" inside the same level, from Students to Students. An option for co-operatively creating documents (workgrouping) as well as the classic, Internet methods of establishing scientific communities online, should not be left out. The *real-time communication* at previously agreed times; chat, or the practice of "posting" comments (*Newsgroups* or *Bulletin boards*) independent of the time offer possibilities for discussion outside of the academic events.

Technical Considerations

The programming of interactive WWW- systems on the basis of suitable middleware, which could only be solved unsatisfactory in the early days of the WWW, has been thoroughly revised in the last few years. The current technological situation seems to be marked with a surplus choice of script languages, relational databank systems and application servers. The type of programming tools, which represent the necessary conditions for establishing such a www information system, are freely available per download over the internet, either as a commercial product with the relevant support service or in the form of the open source concept under the basis of the GPL (Gnu Public License). Passing on the source code under the GPL conditions, a practice common amongst scientific communities, offers from the perspective of an Institute, ideal conditions for developers:

- The software can, at any given time, be changed, extended and reevaluated to cater for new parameters, due to the given access to the source code and the consequential transparency. This is a budget friendly alternative to commercial license forms as there are no license costs.

- Once modules or complete systems are finished, they can (and should) be made available, by disclosing the source code and under the same license conditions, to interested partner institutions or private persons, be it for advancing software development or be it as a multiplication effect of having ones own content concept more widely available to the (specialist) public.

The potential sub-compartmentalization and distribution of the software plays an important role in respect to the programming methods used, most of all under the relevance of *Abstraction*, *minimalising* and the furthest possible *platform and client independence* should be looked at:

Abstraction This basically implies, the separation of logical editing and visual presentation inside the system. Wherever possible databank query mechanism should remain product independent formulated, to enable the speedy transfer in the case of further processing the code (GPL) or importing it to the competitions product or another Institutes platform.
Dynamically generated HTML code should be, when possible rarely, ideally never, embedded in script code: Using templates allows for the necessary conditions. Templates allow the trouble free adjustment to a university specific Corporate Identity.
XML is optimal for the media neutral storage of documents, depending on where the documents are needed and by way of a suitable transformations technique, they can be viewed on a standard WWW browser, a mobile telephone or optimized for printing

on paper. XML documents can be used by WWW information systems interested in an information's participation as part of a "content syndicate", without great effort.

Minimalising The developed components should use a minimum of possibilities, those predetermined by the application server and if possible no one sided or exotic additional modules. In extreme cases it should be possible to for the system to be installed in the computer center of every University without further ado.

Platform independence All the platforms which are commonly used in scientific data processing must be completely supported: As servers: *Linux, FreeBSD, Solaris, Windows (NT, 2000)* along with *Apple Mac OS X*.
In the client arena: All *browsers form versions 4.0* (Netscape, Microsoft Internet Explore, Opera) on the client systems Windows (95,98,NT, 2000, XP) Apple Macintosh (System 8,9,OS X) and Linux (standard distributions form SuSE and Red Hat).

The example: The Department of Art History at the Humboldt University, Berlin

Many of the described concepts can be made further precise using the example of a WWW project at the Art History department of the Humboldt University (chair Prof. Dr. Bredekamp). The previous static version of the institute's homepage (*www.arthistory.hu-berlin.de*), were principally the same as any other national Art Historical teaching and Research institution. Surrounding the bi-yearly updated publishing of the commentated lecture directory were a series of the Institutes internal issues informationon (current, Employees) and the pages offering specialist information (studies, *Census*, Resources). One assistant was responsible for the HTML programming and updating. There was no multi-user interactive access to special area of the web page.

Dynamic system The follow-up system is technologically based on open source components, which have been developed largely for the needs of the Art History department. Additionally, a functional adjustment of existing applications was necessary to guarantee the perfect integration into what became a truly "interactive" homepage.
The middleware script *PHP* on an *Apache* HTTP-Server was used as part of the component development, the data storage utilized both the relational databank system *MySQL* and also in the form of *XML* files, which were validated by the PHP integrated, event orientated SAX-Parser *Expat*. XSTL is responsible for the transformation of the XML-Files into a suitable document presentation (either server side by way of the Sablotron-engine or client side by means of Netscape > 6.1 or Internet Explorer > 6.0).
The complete system around the area of the event accompanying content was extended using the, in university circles, well seasoned, in Smalltalk developed *WiKi*- Server, for creating seminar documents.

News and newsletter Publishing short notices, on the entrance page presents the same situation as those of an editorial publication. Independent authors publish, by themselves, news articles, "self motivated" (room or consultation hours changes) or tips relating to events happening outside of the Institute. Articles can be activated on specific dates using a WYSIWIG interface and if needed, sent to a list of subscribed e-mail recipients using a newsletter module. The need for a "HTML assistant, demises. The content structure of the homepage organizes itself, more or less, independently. The mass of content relies on the publishing motivation of the authors themselves.

Commented Lecture Directory The production of the Commented Lecture Directory is still warranted by the secretarial office, although now under different conditions. The content data of the Commented Lecture Directory, presented as a relational structure in the MySQL databank, should ideally be made available directly by the teaching staff. The secretarial office takes over editorial and final controlling function. A SQL query is started per mouse click, which generates; an XML file, the online version in*HTML* and *PDF document* for printing purposes. The PDF document can, in addition to a download version, be put aside as a virtual online document, which can be sent out per e-mail using the previously mentioned pre-subscribed Newsletter. The XML file is parsed using Expat; interested external institutes can integrate the XML file into the appearance and content structure of their own homepage. The Commented Lecture Directory demonstrates, in an exemplary fashion, many aspects of the interactive WWW information system: Along with the archiving of curricular activities (data bank with the possibility of performing SQL queries) comes a time and manpower reduction optimizing the creation process by the simultaneous production of the print version, which can be distributed as send able download document. External Institutes participate and share the, from now on, co-operatively evaluated content section.

Personal Homepages The module "private homepages" guarantees the aspect of individually presenting employee relevant research results, publications and supplementary information by teaching staff. Using a personalized (password protected) access and choosing template based format guides allows the creation and editing of an own homepage with a *WYSIWIG* editor. Picture files can be added using a file choosing dialog box, uploaded to the server, automatically and correctly positioned.

Accompanying Study Material Teaching staff and students are equally capable of publishing curricular-relevant documents, which can be downloaded by the visitors of their web site, using the Filemanager, an up and download mechanism. New possibilities allow the useful extension of conventional analogue systems, as part of the teaching staff members planning procedure for an academic event, such as the handset in the library or study relevant additional information. The light box allows a preview of the seminar's slide show presentation.

Document creation The *WiKi server* makes the co-operative creation of HTML documents possible. This service is mainly aimed at the students of The Art History department. It is useful for the co-production of presentations and essays. An additional option being a*bulletin board* and a *chat system*.

Synopsis

Considering the challenge, which the introduction and usage of digital pictorial worlds and new technical communication forms presents to the "scientific community", there are two aspects that are of essential importance: Firstly, a tendency to visualize knowledge must be specified (i.e. In the form of data mining, visualizing databank queries, pattern recognition, mechanical seeing etc.); secondly the digital revolution should be valued as revolution in communication and knowledge relaying.
These respectively shape the influence of such factors as the presentation and portrayal representation methods of Art Historical content. The way in which teaching staff and students interact could undergo a fundamental change.

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Thomas Lackner Born 1963, Studied Art History, Philosophy and Pedagogic in Bochum (Ruhr University). Has been involved in managing WWW- projects in the area Science and Universities. Since 1992 active as an IT-Consultant.

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