Decoding and Encoding the Middle Ages

Biases and Promises of Computer Graphics and Information Systems in Medieval Scholarship

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Introduction

The last decade has been an era of rapid development in computer supported scholarly work. Especially information and communications technology has been affecting the dissemination of results. The shift has been prevailing also in less technologically oriented humanities subjects such as medieval scholarship. Organising a symposium titled "Virtually medieval?" is suggestive and in a sense all the contributions are in fact incarnations of a suggestion that virtual, that is to say computers, computer graphics and computer based information systems, have reached a state of some sort of, at least, relative maturity.

The diffusion of information technology in the medieval studies community could be argued to appear basically comparable to a typical diffusion of a new innovation.[1] First the assumed and readily perceived possibilities of the technology are enough to justify experiments conducted by pioneers. Thereafter the inner motivations become questioned and the subject matter gets more attention from early adaptors and later by the majority. Still one step further is when the technology effectively loses interest and becomes a rule instead of being interesting in and of itself. This observable motion of computerisation becoming a part of everyday life is in many respects a way to concentrate on the actual subject matter. However, becoming common does not necessarily denote that the implications of the interaction between technology and the subject will be clearly understood.

[1] As classically presented in Rogers, Everett, *Diffusion of Innovations*. New York: The Free Press 1962.

As the technological or technical possibility seems to already have become a motivation of its own to use computers, the question of actual motivation has become to appear more and more puzzling in a number of projects concerning computers and the study of the past. Both system designers and scholars are motivated, but what is or rather would be the actual motivation? What is earned and what is given up by answering the call of the temptress known as technology. What is actually being done while we process and present information to the general and scholarly public through using information technology. The purpose of this contribution is to discuss observations made on the relations of results attempted to be achieved by implementing computer driven systems for presentations about the Middle Ages and what seems to be the prevailing practise. As most of the evaluations and surveys on computerised presentation of history have been concentrating on user satisfaction, learning and technical issues, this paper focuses on the subject viewpoint. Equally important to having a user-friendly and engaging system supporting learning, should be to have a system that addresses in a satisfying manner the goals regarding history itself.

This discussion is based on observations and experiences gathered during half a dozen development projects between 1998 and 2004. The focus of the projects and the discussion here is on issues of presenting medieval history and archaeology to the general public by using computers. The most fundamental notions could be agreed to be however, relevant to a degree also concerning the notion of how and why computers could be used to study the past in a scholarly sense.

A four-part approach to the practises of digital presentation

Disseminating the scholarly knowledge on medieval culture is a rather inclusive definition. Not only does medieval culture refer to a multitude of viewpoints, but also the process of dissemination is an equally wide phenomenon. Whether being a website, a portable guiding system or a more traditional multimedia kiosk, some general qualities concerning the products seem to be rather prevalent. The notion concerns less technical and content related choices, but rather the initial impetus for developing something. A somewhat simplistic four-part classification may be used elucidate typical starting points.

A number of projects have begun from a notion that a potential *technology* exists. A developer or a contractor observes the available resources and the capacity of a new or newly available technology to offer a chance to achieve something interesting. In launching new projects and developing applications for public presentation of cultural heritage, I would suggest that at least an implicit impulse to use technology has been playing by far the most crucial role. An illustrative example is the tabletpc-based guiding system prototype developed in co-operation with the Naantali (Sw. Nådendal) Town Museum. The project began, although long before the finally realised Naantali-project, as an idea that a portable device could be used as an interactive guide on an archaeological site. From the present perspective, the notion is not very interesting any more,[2] but five years ago in the beginning it still had some novelty value. The approach commences essentially from the notion that the existence of a technology is a sufficient prerequisite to use it for presentations about the Middle Ages or any other historical subject. Technological impetus is hardly a deficient premise for a system and as a general prerequisite it is likely to be an implicit starting point for more or less all of the digital heritage pursuits.

Another typical starting point is that suitable material for publication or presentation does exist. The material could be basically anything from a compilation of medieval text sources such as the *Finlands Medeltidsurkunder* (FMU) or the case of the *Diplomatarium Fennicum* -project[3] to individual archaeological finds as was the case in the Archaeologist Files project.[4] Within the confines of this category could be included also the bulk of digitising projects aiming to produce electronic versions of different museum, library and archival collections even if their aims are often divided

[2] At the moment a quick search in most notable digital cultural heritage related journals and conference proceedings reveal dozens of descriptions of projects (e.g. Proceedings of the CAA and VAST conferences); with some reservations on the representativeness of results, further indicative evidence may be retrieved by searching for instance in Google Scholar search.

[3] Piippo, Mikko, Uusia keskiajan lähdejulkaisuja ja lähdejulkaisun uusia tuulia. In: *Historiallinen aikakauskirja* 2003:2, pp. 305-310; http://vesta.narc.fi/df/ (1.10.2005); see also Piippo 2003 for similar projects in Norway (*Diplomatarium Norvegicum*) and in Denmark (*Diplomatarium Danicum*).

[4] Vatanen, Isto, The Archaeologist Files: An approach to the digital contextualization of archaeological finds in user adaptive information systems. In: *Archaeological Informatics: Pushing the Envelope CAA 2001. Computer Applications and Quantitative methods in Archaeology. Proceedings of the 29th Conference, Gotland, April 2001*. BAR International Series 1016. Oxford: Archaeopress 2002, pp. 325–329.

between a disseminative ambitions and objectives relating to curatorial issues.[5]

A rather special case of publishing existing content is dissemination or construction of potentially existing content. That is something, which does not exist in practise and could be found only as a description or a plan. An illustrative example of such an approach is an Italian touring exhibition and a virtual museum incorporating multimedia presentations and three-dimensional graphic constructions of Leonardo da Vinci's inventions,[6] none of which apparently were constructed in the inventor's own lifetime.

In the third category of presentations the work starts with the notion that there is a *phenomenon or theme* requiring explanation or illustration. The theme could be naturally anything from urbanisation of an area to more abstract subjects such as childhood in the Middle Ages. The practical aim could be either scholarly exploration or popular publication. A fairly good example of this is for instance the Lost Town multimedia presentation,[7] where the aim was to illustrate the urban layout of Turku (Sw. Åbo) in the late fifteenth century. The essential notion on the apparent thematic starting points seems to be a partial infrastructural impetus in a sense that some kind of digital platform is perceived to be a feasible media for disseminating often rather wide ranging and simultaneously mental phenomena, which are difficult to disseminate in more traditional forms.

The fourth typical impetus for a system is that an *explicit problem* requires addressing. This approach is probably a more typical one for academic projects than a museum or cultural heritage publication. Problem as a starting point could naturally reflect on both analytic and presentational problems somewhat stretching the borderline between cases of problem oriented and presentational thrust. A typical presentation related problem addressed by a computer is a case where the focus is on presenting something that is impossible to make physical because of practical and conceptual limitations. Reconstructed buildings and landscapes are an outstanding example of something, which is often practically difficult to

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[5] E.g. Memory-project (Finland) 1996–1998 www.lib.helsinki.fi/memory (1.10.2005); Myytti 1997– (Finland) www.museoliitto.fi/projektit/myytti (1.10.2005); Digitisation principles at Kungliga Biblioteket (Sweden) http://www.kb.se/digsam/principer.htm (1.10.2005).

[6] Leonardo3 http://www.leonardo3.net/ (1.10.2005).

[7] Vatanen, Isto, Uotila, Kari, Sartes Minna et al., *The Lost Town*. Turku: Aboa Vetus & Ars Nova Museums 1998–2000; Uotila, Kari, Sartes, Minna, Medieval Turku: The Lost City – A Project trying to reconstruct a medieval town in Finland. In*: Virtual Reality in Archaeology*, eds. Juan A. Barcelò, Maurizio Forte and Donald H. Sanders. BAR International Series 843. Oxford: Archaeopress 2000, pp. 219–223.

recreate even as diorama or plaster of Paris models due to spatial limitations.

An important notion about this attempt to present an indicative typology is that the initial impetus is rarely confined to only one category. The categories themselves do suggest interplay and in a sense the actual reason to do something seems to form finally at the interface of different factors where the technological incentive still seems to be having a rather central role. This is readily explained by the practical advances, but likely also by the continuing process of mutual establishment of relations between technology and the exploiting disciplines.

Where is the question?

Considering the four motivations to choose a computer-based approach to the presentation of the past, not all of them are necessarily problematic. If the technology is chosen for the sake of itself, for the sake of presenting a material or presenting a phenomenon, the approach is essentially answer-oriented. An implicit premise is that the chosen platform is an appropriate means to tackle the issue. It could be argued that we do have a very precisely defined, visually and technically appealing answer while we do not necessarily have a question to which the system is the answer. The issue partially relates to the well-documented characteristic of information and communications technology to cause unforeseeable, both positive and negative, side-effects in a social context.[8] However, the issue could partially be argued that we as developers of new systems are unable to control even the sought after primary effects in a comprehensive manner. As expressed by Economou, "capturing cultural information and its meaning on computer is a very complex process".[9] It is not at all clear, whether a technology is after all a sound idea for presenting the chosen subject, or does publishing of a given material corpus in digital form actually serve any purpose or is the phenomenon such that does it really become any clearer by using a multimedia presentation.

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[8] Sawyer, Steve, Eschenfelder, Kristin, Social Informatics: Perspectives, Examples and Trends. In: *ARIST 36*. Silverspring: American Society for Information Science and Technology 2002, pp. 427–466, see pp. 440–443.

[9] Economou, Maria, The Evaluation of Museum Multimedia Applications: Lessons from Research. In: *Museum Management and Curatorship* 1998:2, pp. 173–187, see pp. 182.

Of this lack of questions a primary example has been the numerous digitising projects so popular lately. In many cases the impetus seems to have been some kind of a popular mantra that everything should be put into a digital form and published on the web. The motivation also includes an idea about for whom and for what purposes the material will be digitalised; there are no perceivable subjects for criticism. Digitising with an explicit aim to present users, customers or visitors the digitised versions of the manuscripts or artefacts to protect the fragile originals is sensible as far as the existence of digital copies actually does reduce the need to use the originals. Digitising to secure preservation in a purely technical sense of archival preservation is equally arguable if the archival process itself is well done. Publishing something for the public good is also quite acceptable as long as this is done in a way that the thing called public has access to and interest in the particular examples of digitised heritage.

The notion as such is not a new one and has been repeated a number of times in different forums.[10] Considering the use of computers for presenting the human past, whether it is the Middle Ages or any other part of it, the critique gives still some food for thought. Like the digital form of a document is in itself basically worth nothing, a digital presentation is worth something only, because of the set of issues it is suited to address. A further illustrative parallel comes from the scholarly world where a sense of dialectic functions between new methods and their appropriate uses. As a new promising method, a tool to carve out answers, is introduced it spreads rapidly through the community of researchers. The tool is applied to a multitude of different problems, in some with more success and in some others evidently with less promising results. The eager pioneering is followed by criticism pointing out restrictions in its possible application and finally judging most of the previous attempts as failures. Finally following the criticism and a period of consideration and relative immobility, some scholars come up with new projects with probably more realistic goals showing that the method is applicable after all. An illustrative and practical computer and the past related example of this motion may be found by studying the proceedings of the Computer Applications and Quantitative Methods in Archaeology conferences where such swells of GIS and three-dimensional modelling as well as of different field documentation techniques have followed each other.

[10] A rather concise compendium on the present state of affairs concerning the digital in cultural heritage, see deliverables of the DigiCult-project (www.digicult.info 1.10.2005).

Finding out the possible answers a technique, such as a multimedia presentation or an information system, might provide is not exactly straightforward. Similarly determining a set of suitable questions the answers might be fitting is equally intricate. Considering the practise of developing a presentation for the general public, an important phase in a project should be always be finding these potential right question-answer pairs, but also tendering sensitivity for any possible ways of how the presentation could be misunderstood. A rather dangerous fallacy, equal to the idea that a multimedia presentation or information system is an explanatory device, is to expect that the question-answer pair used as a foundation of the design is the one that is communicated. In that sense a session with an explicit focus on pinpointing possible and impossible somehow faulty question answer matches the system may in a sense cause, would in many instances improve the designs considerably.

Life of questions and answers

Even if the basic notion that somehow faulty question and answer matches could exist is interesting and could lead to improved systems development, the conception is simultaneously rather problematic from the epistemological point of view. Using a bird eye view to explore a virtual reconstruction of a medieval town is undoubtedly beneficial to show the town plan and locations of known buildings. Yet many spectators comment quite legitimately about the impossibility of humans flying in the Middle Ages or on the other hand wonder about the beauty of the panorama presented from the height of 1000 feet "enjoyed by the people of the past". The example is an aggravate one, but similar problems do occur on different scales which typically are far more harder to point out, but equally meaningful considering the part of the Middle Ages the presentation is supposed to represent. Therefore it appears to be impossible to state that absolutely false conceptions would not exist, at least in an analytical sense.

An apparent method to reduce the number of false propositions would be to reduce the possibility of variety in interpretations. On one hand it would be somewhat difficult to achieve even by attempting to be as explicit as possible. On the other hand it would be also intellectually rather difficult to justify. As the idea of advance in science and scholarly study of the Middle Ages is more or less based on freeform associations, ruling them out would be ethically untenable. Further as an associative method has proved

to be highly successful in improving learning, an approach building on presenting things as they were appears even more backward.

In fact the approach of using free association of data simulating the scholarly reasoning has been used successfully in a number of different applications.[11] One good example is a virtual medieval scholar developed at Maerlant Centrum of Catholic University Leuven in Belgium simulating how medieval manuscripts are studied. Comparable simulations of a research process are the rather numerous Virtual Digs and archaeological simulations developed around the world. A slightly different approach was used on a CD-ROM multimedia system developed at Aboa Vetus on medieval glass vessels.[12] The intention was to present the subject by using a large network of individual thematic nodes which users could browse by using a number of different way-finders, which were built around the initial notion of at first deliberately making the user get lost in the material. Thereafter by digging deeper and deeper into the content it was possible to start getting an idea of the organisation of the information and the subject matter itself. The objective was to create deeper insight in the subject than a typical superficial presentation would result. Whether this was achieved seemed to depend considerably on the individual user and especially on the level of motivation to continue browsing. The trials, however, gave enough indication to argue that a deliberate lack of guidance does offer a possibility to create enhanced meaning in the context of the human past.

Considering the source of right questions I am not willing to take a position that a scholar should act as the ultimate source of absolutely correct conceptions and ideas. From the visitor's point of view everyone should naturally have the right to think that the Middle Ages or the past in general, is something that is utterly uninteresting. As an individual opinion the notion has to be acceptable unlike in the broader societal sense where a negotiated idea of the most probable truth, if not an objective one still holds a position. The idea of most probable inherently suggests a control of the probability of information and simultaneously that information maintains a certain position. If a developed system is going to be highly interactive, as it often is, some of the control is simultaneously given up. Naturally control is also lost by writing a book, because those who read it make their own interpretations of the text and the subject matter. But still there is a difference whether we release a story about something for further

[11] Likely benefits suggested also in Economou 1998, 182.

[12] Vatanen, Isto, Uotila, Kari, Haggrén, Georg et al.: *Cheers! Fragments from the Middle Ages*. Turku: Aboa Vetus 1999.

interpretations to come and tackle, or do we release premises for a story and let the reader decide on the narrative.

Although controlling associations caused by a presentation is inherently difficult, the associations and their explicit management could also be taken to be the focus of the developed application. That approach was used in the Archaeologist Files system at Aboa Vetus where the initial objective was to create a system for contextualising individual archaeological finds through using a computerised system. The system incorporated a filmed narrative presentation of each individual object in its context and provided the user with a browser where the objects database could be explored by associating finds through rather simple classifications.[13] The award-winning project MuseoSuomi developed in cooperation with the Helsinki Institute of Information Technology, National Board of Antiquities and a number of partners in Finland is based on the same basic notion to classify everything and in that manner communicate meaning in the interface level. Even though the idea of documenting meaning and context in scholarship concerning the past human activities is well founded, I would express a slight reservation concerning the efforts including the one I was involved in.[14] Even if the rather fundamental human characteristic of expressing an unlimited number of multiple interpretations and conceptualising things is acknowledged in principle, I am rather sceptical whether this aim will be reached while a cultural consistency is retained. I would consider it rather questionable whether in the end a technical framework used by human actors for describing meaning exactly results in meaning. Associations and knowledge are probably far too fast for the frame to keep pace.

Decoding and encoding: what is actually happening

Despite the expressed reservations considering computer applications in general public presentation, the purpose of this contribution is not to present a luddite view of the future. A computer application or information systems may be used to create visually appealing experiences. In the future museums could probably use more of the qualities of easily sharing and reproducing information to be disseminated in multiple channels. Bypassing

[13] Vatanen, Isto, Uotila, Kari: *The Archaeologist Files*. Turku: Aboa Vetus 2003; see also Vatanen 2002.

[14] I.e. *The Archaeologist Files*.

technical arguments, a motivation for deploying a computer system as a part of an exhibition might also be more and more perceived as a necessity. If electronic information and communication systems are used in most of the theatres of life, it is doubtful whether museums are willing to be the only institutions to communicate solely by other means even if the proposition in itself would be a rather interesting one.

The fundamental notion I would like to argue through discussing the issue of perceivably questionless answers is that very little is in fact known about the effects of an individual virtual reality or multimedia application on the users' perception of the past. One notion behind the Virtually Medieval symposium arranged in Turku was to discuss computer applications and visualisations as a means to counter some faulty stereotypic conceptions about the Middle Ages starting from the darkness, bad smell and odd habits. Even if we are trying to communicate something else through using a computer or a three-dimensional visualisation we know very little how an individual is moved by our efforts. General studies on the popular perception of the past do obviously give some indication, but reveal very little that would be beneficial to the practical work of developing applications. A fundamental notion considering the understanding of what is being done and how the questions and answers interrelate is inside the process of making something out of the Middle Ages. In a sense as we try to decode the Middle Ages into a more comprehensible form, we are actually encoding them simultaneously in a form that becomes incomprehensible and uncontrollable even to ourselves.

From theory to practise

Even if the presented critical notions would oblige me by presenting a good practical framework for improving the development process, the conclusions that may be derived from this particular mapping of the state of affairs do remain on a rather general level. What is needed first and foremost is dedicated research on the actual effects of the existing systems on the way the past is perceived on a more profound than purely superficial level of inquiring about implicit details. As existing evaluations have been concentrated on technical qualities, user satisfaction and recalling the

experienced content in a sense of learning,[15] they have produced very little information for assessing the process described in the preceding discussion. Similarly often lacking detailed recall and analysis of the social and cognitive effects of previously development systems would definitely serve a purpose.

What about the presentations themselves? Studies of contemporary culture have for some time expressed strong claims about our culture becoming more and more visual.[16] To face the challenge from the scholarly point of view, education on the visual aspects of culture where the research results are disseminated could probably serve some purpose. If generalised heavily, art historians and archaeologists might be suggested as the ones probably more aware of the visual because of their academic background than for instance historians are. However I still doubt whether many medieval scholars have been to an elementary level course on how to visually disseminate their scholarly findings.[17] Participating in such a course or thinking about the issue would probably help them to see their own research in a more visual manner including the implications of making the findings more visual.

The computer related point of view is somewhat two-fold. On one hand the presentation of the past might definitely benefit from using the best and the latest available technology. On the other hand, presented history itself could probably benefit from better-known technologies. A proposition could be made that if an audience was more familiar with the technology used, probably the same audience would be more inclined to be fascinated about the past rather than on the technology.[18] Similarly the cognitive effort would hopefully be directed to understanding the complexities of the past rather than of the user interface. Further promising efforts for in a sense cooling down presentations, essentially means to distinguish between more or less factual information and an educated guess, have been explored during the last few years ranging from non-photorealistic renderings to different kinds of visual and cognitive cues to present uncertainty.

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[15] E.g. Yamada, S. et. al, Development and evaluation of hypermedia for museum education: validation of metrics. In: *ACM Trans. Comput.-Hum. Interact.* 1995:4, pp. 284–307; CIDOC Multimedia Working Group Multimedia Evaluation Criteria, revised draft 1997 http://www.archimuse.com/papers/cidoc/cidoc.mmwg.eval.crit.html and section for Overall impact (1.10.2005); American Association for Museums MUSE awards criteria http://www.mediaandtechnology.org/muse/criteria.html (1.10.2005).

[16] E.g. Manovich, Lev. *The Language of New Media*. Cambridge: MIT Press 1999.

[17] Here the reference is not made to a technical course on how to use a presentation graphics program.

[18] Cmp. Economou 1998, pp. 175.

The most essential notion would be however that by choosing both the technical designer and the scholar, which at the present far too often lacks one of them, to consider how to match the content with yet another new framework. In this sense the notion could be formulated as a need for thorough mutual understanding of all the components as a whole: the past, the scholar, the user, the technology and the presentation. This could finally lead to an understanding of the encoded decodings and result essentially in a new language for communicating the human past in digital media. An essential aspect of it is by no doubt the communication of the most explicit possible misunderstandings as they are probably those, which are easiest to find and yet the first requiring addressing.

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