The Alliance of Digital Humanities Organisations

The Association for Literary and Linguistic Computing

The Association for Computers and the Humanities

The Society for Digital Humanities – Société pour l'étude des médias interactif

DIGITAL HUMANITIES 2011

CONFERENCE ABSTRACTS

DH 2011

Stanford, CA

The Alliance of Digital Humanities Organizations
The Association for Literary and Linguistic Computing
The Association for Computers and the Humanities
The Society for Digital Humanities – Société pour l'étude des médias interactif

Digital Humanities 2011

Conference Abstracts

Stanford University, Stanford, CA, USA
June 19 – 22, 2011

The 23rd Joint International Conference of the Association for Literary and Linguistic Computing and Association for Computers and the Humanities

and

The 4th Joint International Conference of the Association for Literary and Linguistic Computing, the Association for Computers and the Humanities and the Society for Digital Humanities – Société pour l'étude des médias interactif

International Program Committee

- Arianna Ciula (ALLC)
- Dominic Forest (SDI-SEMI)
- Cara Leitch (SDI-SEMI)
- John Nerbonne (ALLC)
- Bethany Nowviskie (ACH)
- Daniel O'Donnell (SDI-SEMI)
- Dot Porter (ACH)
- Jan Rybicki (ALLC)
- John Walsh (ACH)
- Katherine Walter (ACH: Chair)

Local Organizing Committee

- Suzanne Bennett, Conference Services
- Philip Gin, Conference Services
- Ryan Heuser, Volunteer Coordinator
- Matthew Jockers, Local Host
- Tanya Walker, Conference Services
- Melanie Walton, Conference Services
- Glen Worthey, Local Host

Conference Sponsors

- Alexander Street Press
- Ashgate Publishing Group
- The Bill Lane Center for the American West at Stanford University
- Gale Publishing
- HathiTrust Research Center
- ProQuest
- The Stanford University Department of English
- Stanford University Libraries and Academic Information Resources
- The Stanford Literary Lab

Conference Volunteers

- Benjamin Albritton
- Nicole Coleman
- Kimberley Hayworth
- Long Le-Khac
- Elijah Meeks
- Kathryn VanArendonk

ISBN 978-0-911221-47-3
Published by Stanford University Library
Conference logo and cover design by Nicole Coleman

provide; however, the nature of the Roxburghe albums makes such a presentation particularly challenging. We are dealing with albums where the ballads were arranged in unpredictable ways when collected, where page discoloration makes aesthetic uniformity difficult to achieve, and where parts of the ballads are often obscured or distorted by folding or insertion in the albums' gutter. In addition to finding ways to account for these visual aberrations, the EBBA team spent a great deal of time deliberating over optimal file size for image delivery and attempting to find the most advantageous balance between server speed and image detail. These practices and decisions are crucial ones as EBBA continues to acquire color images of other ballads, including the Euing collection from the University of Glasgow, and the Britwell ballads from the Huntington Library.

Given the irregular and sometimes haphazard nature of ballad collection, decisions such as these will continue to face the EBBA team as the project moves forward with these and hopefully other extant collections in the future. We are excited to share EBBA's progress, as well as our dynamic process of decision making, as we continue to make early modern broadside ballads available to the public.

Virtual Touch. Towards an Interdisciplinary Research Agenda for the Arts and Humanities

Bentkowska-Kafel, Anna
anna.bentkowska@kcl.ac.uk
Centre for Computing in the Humanities, King's College, London, UK

Giachritsis, Christos
c.giachritsis@bham.ac.uk
SyMoN lab, University of Birmingham, UK

Prytherch, David
david.prytherch@bcu.ac.uk
User-lab, Birmingham Institute of Art and Design, Birmingham City University, UK

The term 'haptics' encompasses two areas of study: human and machine haptics. The first relates to the study of the perception of the world through the sense of touch. It includes proprioception (one's awareness of one's own body position in space) as well as cutaneous information (one's awareness of skin deformations). Machine haptics relates to the design and development of devices that simulate the haptic properties of physical objects. In principle, they are incorporated in virtual environments and allow users to experience tactile properties of virtual objects such as size, shape, weight, compliance and texture.

2. Virtual Artefact. A Different Approach

The virtual artefact has firmly established itself as a research tool within several disciplines of the Arts and Humanities. Many art and material culture historians and professionals rely on digital records and visualisations of artefacts in their research, teaching and practice. We have witnessed, from the 1990s onwards, how the virtual artefact has increasingly become photo-realistic and interactive, and how it continues to evolve. The virtual artefact can now be part of a complex, collaborative research environment. With the enhanced technical specifications comes the interest in exploring the research potential of virtual artefacts further. We are here concerned with enhanced simulation of the real experience of physical objects through the application of haptic interfaces, or virtual touch technologies. We believe that the addition of virtual touch would also contribute to greater

usability of the existing, often neglected electronic resources and libraries of 3D artefacts.

Research into the use of haptic interfaces–that is devices engaging the sense of touch in virtual environments–in the Arts and Humanities is in its infancy. Although virtual simulation of physical touch has resulted in important advances in other disciplines–such as medicine, neuro-science, telemanipulation control systems and product design–the potential of such applications to humanities scholarship has not yet been explored. Very few researchers in the Arts and Humanities have had an opportunity to experience haptic devices first hand and to develop a critical understanding of such systems and the perceptual processes involved. There have been some important and promising developments in the area of heritage science, such as the Haptic Museum in the US, being the work of Margaret McLaughlin *et al*. (2000) at the University of Southern California, Annenberg and the Los Angeles County Museum of Natural History; the Museum of Pure Form (Bergamasco *et al*., 2005) and 'Touching the Untouchable: Increasing Access to Archaeological Artefacts by Virtual Handling' in the UK, supported by the Arts and Humanities Research Council and Engineering and Physical Sciences Research Council.

The authors are investigating certain fundamental questions:

- Is virtual touch likely to enhance the ways in which we carry out and communicate research in those areas of the Arts and Humanities that employ 3D visualisations of material culture?
- How much do we learn about artefacts by touching them?
- Would simulating this experience through a haptic interface enhance virtual fieldwork?
- Who can possibly benefit from this experience and how?
- If 'seeing with vision that feels, feeling with fingers that see' (Goethe, 1788) is possible, to what extent can this experience be mediated by a haptic system?

3. To Touch or not to Touch?

A notice 'DO NOT TOUCH' is familiar in many museums and heritage sites and the reasons why this measure is necessary are commonly understood. Most museum managers and curators embrace the notion that touching object collections are important. However, many of the most tactually alluring artefacts present conservation problems that are difficult to overcome. Yet, the existence of 'DO NOT TOUCH' simply demonstrates the visitor's compelling 'NEED TO TOUCH' the artefact. This need originates from the fact that the sense of touch can provide us with haptic-specific information about an object such as absolute size, material compliance, texture, temperature and weight, which cannot be reliably obtained through the audio-visual senses. Therefore, a solution which would allow visitors, curators and researchers in Arts & Humanities to experience these tactile properties without compromising the integrity of the artefact is likely to be very welcome and highly valuable.

The latest haptic technologies can provide a way forward which satisfies both the visitors' and researcher's desire to handle and the museums' necessity to conserve collections for future generations. An early 'proof of concept' pilot study was conducted with randomly arriving museum visitors, which looked at the potential for the substitution of real object handling with touching virtual 3D replicas via a low resolution, low cost, commercially available haptic interface (PhanTom Omni) coupled with a stereoscopic (3D) visual display (Fig. 1).

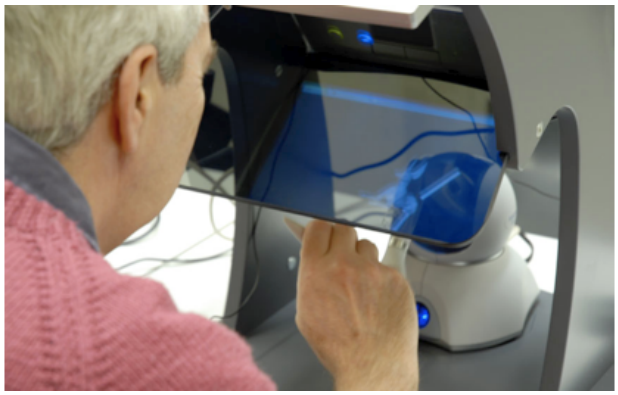

Fig. 1 'Feeling' a virtual replica of an object from the Potteries Museum, Stoke-on-Trent, UK, using the portable haptic system based on a PhanTom Omni, SenseGraphics 3D Mobile Immersive Workbench. Photo: D. Prytherch

The visitor feedback offered interesting insights into the potential of the haptic display of virtual objects to enhance the experience of museum visitors by allowing them to interact with virtual artefacts through touch. An informal trial with a blind member of museum staff demonstrated that he was able to identify the shape of the object and gain some insight into the surface carving and texture of the object, despite the real artefact being untouchable. The same portable haptic system was used in the classroom when teaching a masters module in Digital Arts and Culture and received valuable feedback from the students (Fig. 2).

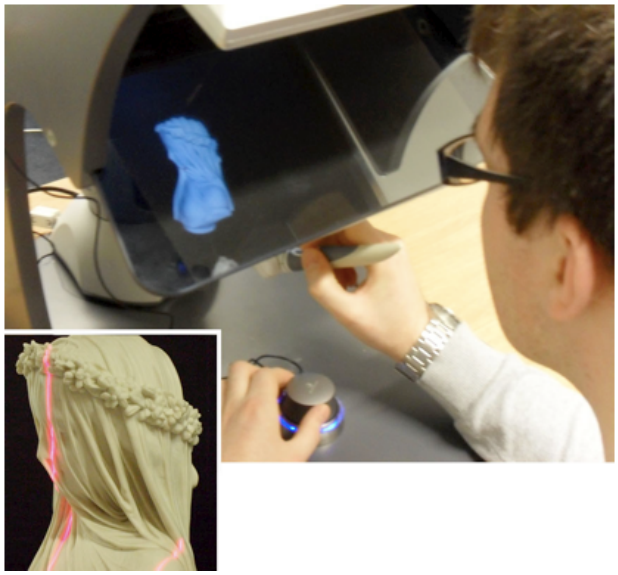

Fig. 2 Haptics in the classroom. A postgraduate course in Digital Arts and Culture, Centre for Computing in the Humanities, King's College London, UK, 24 November 2010. Photo: A. Bentkowska-Kafel. Insert: Laser scanning of the Bride (Potteries Museum, Stoke-on-Trent, UK) to create a virtual 3D replica. Photo: D. Prytherch.

Archaeologists, art historians, restorers, palaeographers and other specialists who examine artefacts through touch to assess and authenticate their material, execution and other tactile qualities, might also be interested in haptic access to material ex situ when direct access is not possible. The capacity of human haptic perception–the ability to perceive the world through the sense of touch–to differentiate qualities of material, is incredibly rich and we learn much about the form and composition of an artefact from our sensitivity to thermal conduction and fine surface textural qualities through touch. Current commercial haptic devices do not make effective use of tactile (or cutaneous) cues, that is the physical properties of objects which are perceived through skin mechanoreceptors. Technologies that do operate at this level are either experimental, lab-based systems or, if commercially available, are extremely expensive, as well as being complex to setup and maintain. Certain limitations inherent in the whole concept of virtual representations of objects, notably weight and balance, which are dependant not on the virtual object itself, but on the properties of the specific device with which we feel it, need to be resolved.

The virtual artefact has opened up unprecedented possibilities for new research into the material culture of the past. Digital technology supporting visualisation of heritage is becoming ever more sophisticated and many projects of this kind seek to better the accompanying scholarly apparatus. The publication of the *London Charter for the Computer-based Visualisation of Cultural Heritage* (version 2.1, February 2009), is a step in this direction. Some scholars working in this area claim that their visualisations of ancient sites re-create the real human experience of 'being there'. Some believe that digital visualisation itself may 'include sight, hearing, and potentially in the future, smell, taste, and touch' (Mudge, 2011). The lack of tactile experience is one of the significant issues inherent to digital visualisation of heritage. In addition, our limited knowledge of the real-life processes that we are trying to simulate through the use of digital media is always a challenge. We need to better understand the perceived discrepancies between the real object and its virtual record.

4. 'Feeling with a Seeing Hand' (Goethe, 1788)

In the process of gaining knowledge about the *real* world, *vision* allows us to explore the environment instantly and provides us with information about object properties such as 3D shape, colour, texture, condition, relative size, relative distance as well as events such as motion or changes of all these visual properties. Even when looking close-up is possible our knowledge is still incomplete. This is because vision alone does not allow us to perceive important physical properties of materials such as weight, centre of mass, temperature, surface roughness, hardness and actual size. In order to perceive these properties we need to engage *touch*. Touch allows us to perceive the properties which are essential for effective *interaction* with the physical world. By exploring an object through touch, we can form a better understanding of its purpose and use, and develop insights to inform us about its past users. For example, it is not possible to appreciate the physical endurance of an ancient warrior just by viewing a shield he might have used. For this, it is necessary to engage touch: lift and carry it.

Although still relatively primitive (comparing to advances in visual displays), current haptic interfaces (HI) allow a range of haptic and tactile interaction with virtual objects, from the exploration with one or multiple fingers with one or two hands (Giachritsis *et al*., 2009; Giachritsis *et al*., 2010; Monroy *et al*., 2008) (Fig. 3) to more immersive experience involving movements from arm joints.

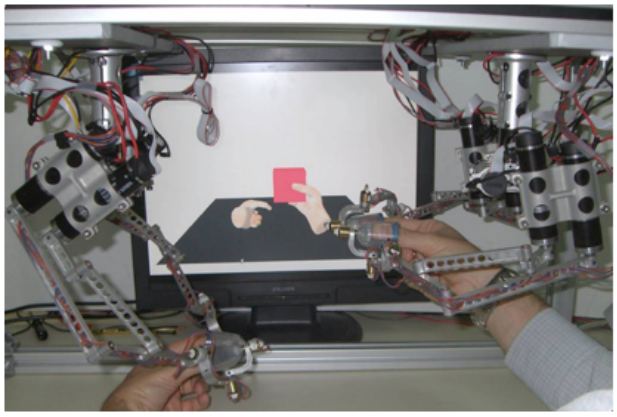

Fig. 3 Bimanual manipulation of a virtual object using precision grip with the haptic interface device Master Finger 2.

Haptic applications vary from simple touch of the virtual object to real-life probes used as medical or artistic tools for working on object surface. The extensive industrial and academic research in advancing HI shows the impact of these technologies on the way people learn, train, work and entertain themselves in virtual environments. Despite their limitations, HI technologies already offer significant advantages to users of virtual environments by allowing them a more realistic interaction with virtual objects.

Recent advances in recording art objects, made possible by such technologies as photogrammetry, touch probing and 3D structured light or colour laser scanning, have augmented the already considerable body of virtual artefacts, created primarily through Virtual Reality (VRML) modelling, with records of unprecedented accuracy. The E-Curator project carried out by the University College London Museum Collections and partners, used 3D colour scans of various artefacts captured with an Arius scanner, to develop a traceable, grid-based dissemination and visualisation system. This system enables museum curators and conservators to identify and assess objects remotely in a collaborative, networked environment. The addition of haptic interfaces engaging the sense of touch seems an obvious future development. The question is which particular aspects of human touch these devices should simulate so that they could be useful to heritage professionals?

5. Towards a Research Agenda for the Arts and Humanities

If the promise of more intuitive and multisensory computing–than the one with which we are familiar today–is real, we should investigate how these future developments in information technologies may affect our own disciplines. We argue for the need to explore the potential benefit of haptic interaction as an addition to audio-visual experiences of virtual artefacts. How much do we learn about artefacts by touching them? Would simulating this experience through a haptic interface enhance virtual fieldwork? Who can possibly benefit from this experience and how? If Goethe's (1788) ‘seeing with vision that feels, feeling with fingers that see’ is possible, to what extent can this experience be mediated by a haptic system? We will not be certain of the answers, nor have influence over the future of multisensory computing, unless we explore whether current developments and wide-ranging research meets our varied expectations.

The authors propose a research agenda in this area is made from the four positions: 1) digital scholarship of material culture; 2) the contribution of human vision and touch in the perception and appreciation of real and virtual environments; 3) haptic interface design and applications, and 4) haptic access to 3D records of art objects within networked collaborative environments.

The authors seek to investigate the level of interest of those engaged in historical and cultural studies in researching the potential benefits of adding virtual touch to virtual artefacts for the advancement of cultural heritage scholarship and education. Expressions of such interest and comments are welcome.

References

Brewster, S.A. (2005). 'The Impact of Haptic ‘Touching’ Technology on Cultural Applications'. *Digital Applications for Cultural Heritage Institutions.* Hemsley, J., Cappellini, V., and Stanke, G. (ed.). Aldershot: Ashgate, pp. 273-284.

E-Curator Project, University College London. `http://www.museums.ucl.ac.uk/research/ecurator/` (accessed 14 March 2011).

Frisoli, A., Jansson, G., Bergamasco, M. and Loscos, C. (2005). 'Evaluation of the Museum of Pure Form Displays Used for Exploration of Works of Art at Museums'. *Proc. World Haptics Conference 2005.* Pisa, 18-20 March 2005. `http://ima.udg.edu/~closcos/Publications/Frisoli-A-Evaluation-PureForm_regular.pdf`.

Giachritsis, C., Barrio, J., Ferre, M., Wing, A., and Ortego, J. (2009). 'Evaluation of Weight Perception During Unimanual and Bimanual Manipulation of Virtual Objects'. *Third Joint Eurohaptics Conference and Symposium on Haptic Interfaces for Virtual*

Environment and Teleoperator Systems. Salt Lake City, UT, 18-20 March 2009.

Giachritsis, C.D., Garcia-Robledo, P. Jr., Barrio, J., Wing, A.M. and Ferre, M. (2010). 'Unimanual, Bimanual and Bilateral Weight Perception of Virtual Objects in the Master Finger 2 Environment'. *19th IEEE International Symposium on Robot and Human Interactive Communication.* Principe di Piemonte - Viareggio, Italy, 12-15 September 2010.

Goethe, J.W. von (1988). *Roman Elegies, VII [1788].* London: Routledge.

London Charter for the Computer-based Visualisation of Cultural Heritage. http://www.londoncharter.org (accessed 14 March 2011).

McLAUGHLIN, M., L., Sukhatme, G., Shahabi, C., Medioni, G. and Jaskowiak, J. (2000). 'The Haptic Museum'. *Proc. EVA Conference on Electronic Imaging and the Visual Arts.* Florence, 2000.

Mudge, M. (forthcoming). 'Transparency for Empirical Data'. *Paradata and Transparency in Heritage Visualisation.* A. Bentkowska-Kafel et al. eds (ed.). Aldershot: Ashgate. http://visualizationparadata.wordpress.com .

Monroy, M., Oyarzabal, M., Ferre, M., Campos, A. and Barrio, J. (2008). 'MasterFinger: Multi-finger Haptic Interface for Collaborative Environments'. *Proceedings of Eurohaptics '08.* Madrid, 10-13 June 2008 , pp. 411-419.

Prytherch, D. and Jefsioutine, M. (2007). 'Touching Ghosts: Haptic technologies in museums'. *The Power of Touch: Handling Objects in Museum and Heritage Contexts.* Pye, E. (ed.). Walnut Creek, CA: Left Coast Press, pp. 223-40.

Touching the Untouchable: Increasing Access to Archaeological Artefacts by Virtual Handling. http://www.heritagescience.ac.uk/index.php?section=97 (accessed 14 March 2011).

Improving the AAC-FACKEL, a Scholarly Digital Edition of the Satirical Journal "Die Fackel"

Biber, Hanno
hanno.biber@oeaw.ac.at
Institute for Corpus Linguistics and Text Technology, Austrian Academy of Sciences,Vienna, Austria

In the following a presentation of the latest developments to improve an existing scholarly digital edition will be given. The scholarly edition in question is the AAC-FACKEL, the digital edition of the historical literary journal "Die Fackel". The presentation will be devided into three parts representing three consistent steps in the development. First, the general principles and the specific edition and design considerations concerning the online publication of the AAC-FACKEL will be presented. Second, the particular questions of editing and exploring this important and interesting source of literary history of the German language by means of a sophisticated research tool will be addressed. Third, a plan and the considerations for improvement of this successful and widely used online edition, which is based upon the principles of corpus research and text technology, will be presented. The digital edition of the historical literary journal "Die Fackel" ("The Torch") has been developed in a collaboration of researchers, programmers and designers within the framework of the AAC-Austrian Academy Corpus which is operated by the Institute for Corpus Linguistics and Text Technology at the Austrian Academy of Sciences in Vienna. "Die Fackel" was originally published and almost entirely written by the satirist and language critic Karl Kraus in Vienna from 1899 until 1936. The AAC-FACKEL is online since January 2007 and offers free online access to its 37 volumes, 415 issues, 922 numbers, comprising more than 22.500 pages and 6 million tokens. The digital edition contains a fully searchable database of the journal with various indexes, search tools and navigation aids in an innovative and functional graphic design interface, where all pages of the original are available as digital texts and as facsimile images, which is one important principle of the AAC's resources and publication initiatives. The work of Karl Kraus can be regarded as one of the most important contributions to world literature. It is a source for the history of the time, for its language and its moral transgressions. Karl Kraus covers in his typical and idiosyncratic style in