

AHRC ICT Methods Network Seminar
**TECHNICAL INNOVATION IN ART HISTORICAL RESEARCH:
OPPORTUNITIES & PROBLEMS**

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Report by Anna Bentkowska-Kafel

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Background

The History of Art is primarily concerned with the study of visual material. The benefits of supporting studies in this area with digital imaging and other computer-based methodologies have been demonstrated by a number of academic projects since the late 1980s. Art historians recognized the research potential of the digital image even before the advent of bitmap display (*vide* The Morelli Project). Equally, they began investigating the use of databases for indexing and classification of visual material, as soon as these became available. One could have expected that these pioneering applications would have enticed the subject community at large to routinely use digital technology in art studies. Despite the advancement in user-friendly computing, this has not been the case in mainstream History of Art: digital methods are being forced rather than adopted out of recognition of their research potential and enhanced standards. In teaching for instance, the sluggish move from conventional 35 mm slides to digital images has not been prompted by the latter's permanent and more accurate colour, or incomparably higher definition, but by the announcement by Kodak in 2003, followed by other manufacturers of slide projectors, that their production was about to cease. Subject-specialist ICT has not become part of the routine training of the art historian; a decline rather than surge in such provision in recent years is a cause for concern; a number of undergraduate and postgraduate courses that used to offer such training have closed down (*vide* BA (Hons) Art and Design History, Solent University; MA Digital Art History, Birkbeck College). In areas where the need for ICT has been accepted by art historians, such as digitization of picture archives, the provision of technology does not normally come from within the community but tends to be out-sourced; this brings little or no educational benefit in terms of the ICT skills of academics and students. Individual scholars who apply advanced ICT methods in their research still find themselves in an isolated position: they do not receive support that would ensure the dissemination and sustainability of the tools and resources they create. This seminar sought to address the opportunities and problems of ICT-based research from this perspective, and in particular:

- The development and application of computer-based analytical tools for art historians.
- Dissemination and sustainability of computer-based research.

A considerable effort was made prior to this seminar, to establish whether the concerns of the organizers and speakers are shared by other art historians. The views of a number of scholars known for their innovative use of technology were solicited. These included: researchers known to have authored computer-based art projects delivered as multimedia or in another unconventional format, including past and current PhD students and the winners of the CHArt Research Award (run by the Computers and the

History of Art group in the 1990s); custodians, providers and users of digital images and other electronic resources, especially those protected by copyright; and Intellectual Property experts.

Discussion material concerned with the development of digital imaging tools for art historians (referred below as CATHA) proposed by Tim Benton was circulated prior to the seminar, together with an exercise in image content classification. The event was informed by the comments received.

Participants

The event was open to all. The audience consisted of invited guests and those who registered through the Methods Network. The following communities were represented: art historians/ICT practitioners; museums and galleries; picture archives; digital data services and repositories. See the participant list for names and institutions.

Presentations

Two presentations were given, by Professor Tim Benton and Dr Anna Bentkowska-Kafel respectively. The aim was to present a study case, based on individual research and to raise questions of interest to a wider community

- Tim Benton: *Structuring the Indecipherable: Le Corbusier's Diaries*

Tim Benton is Professor of Art History at the Open University. His interests are in architectural and design history of twentieth century Modernism. He has published several books on the subject, most recently *The Modernist Home* (V&A Publications, 2006) and contributed to a number of major exhibitions including two recent shows at the Victoria and Albert Museum in London: *Art Deco 1910-39* in 2003 and *Modernism. Designing a new world* in 2006. He has been at the forefront of Digital Art History since the 1980s, supporting his own research with digital techniques. In 2001 he submitted to the Arts and Humanities Research Board a proposal for development of Computer-based Analytical Tools for Historians of Art (CATHA). This bid was unsuccessful.

Benton's research into Le Corbusier involved a study of the architect's drawings and related documents. Benton has developed a technique for comparison and analysis of digitized architectural plans and drawings, so that two drawings showing different views of the same architecture (e.g. a ground plan and elevation) can be matched to scale and examined comparatively.

A whole body of Le Corbusier's work is known only from his personal diaries. In their original format these undated hand notes and sketches are almost useless to an historian. The aim of Benton's current research is to transcribe diaries from 1920-48 and make the information contained within the first batch of 49 notebooks usable for historical interpretation by cross-referencing the undated and unstructured data with records of documents already entered in a database. This database was created in the course of Benton's earlier research. A demonstration of these techniques and resources was given.

Benton also addressed some of the issues involved with his CATHA proposal, stressing the need for new software tools and approaches for teaching art history using digital media. Above all, a replacement for Powerpoint would be needed capable of zoom and pan on high density images (including memory management issues), a means of comparing images, attaching a scale and measuring on images and embedding hotspots in images.

- Anna Bentkowska-Kafel: *Iconology of Anthropomorphic Landscapes in Western Art. A Digital '-Face-lift' of an Old Method.*

Anna Bentkowska-Kafel is an independent art historian, as well as Research Fellow with the JISC 3D Visualisation in the Arts Network, based at the Centre for Computing in the Humanities, and Imaging Officer with the Corpus of Romanesque Sculpture in Britain and Ireland, a British Academy project hosted by the Courtauld Institute of Art. Her research interests include early modern visual culture and the use of ICT in art-historical studies. She has published extensively on iconography and emblematic symbolism of seventeenth-century landscape painting, and issues in digital art history. She supports her iconographic studies with the advanced application of computer graphics and explores the use of digital discourse for contextual studies.

This presentation was concerned with ongoing research into anthropomorphic landscapes, i.e. pictorial representations of nature in human forms. The composition of such artworks is based on the idea of double-imaging: elements of a fantastic landscape are used to represent anatomical features. In some cases, the human figure may only be revealed by rotating the horizontal landscape sideways. This research proposes that in the late sixteenth and seventeenth centuries these images illustrated cosmological beliefs. To support this interpretation an annotated electronic anthology of contemporary sources was developed, offering a parallel display of text in vernacular and English, cross-referenced to other sources in a variety of media; this resource can not be replicated adequately in a non-digital format. Publishing this research as a book has never been an option.

The tools developed by mainstream art history for classification, analysis and interpretation of pictorial genres are unsatisfactory for the study of such complex and ambiguous images. To compensate for the shortcomings of traditional methods alternative techniques and solutions have been explored, these included:

- Pattern recognition and content-based image retrieval – as an alternative to the traditional classification of pictorial genres;
- Digital imaging and various image manipulation and enhancement techniques for the analysis of pictorial composition, deciphering damaged or ambiguous signatures and inscriptions; other computer graphics, including 3D modelling and animation to support interpretation;
- Multimedia software to assemble a variety of iconographic, textual and audio material.

In both case studies the use of imaging and other computing techniques has been crucial for:

- Research organization,
- Gathering of iconographical and textual evidence,
- Data analysis and contextual studies, including new insights gained during the examination process;
- Delivery of the research findings.

While both researchers believe that the application of digital methodologies has greatly enhanced the quality of their respective projects and brought them much personal satisfaction, they also feel they have been penalized by their own technical innovation. Although digital methodologies first employed by both researchers in the 1990s still hold, they have not been widely adopted by other art historians. Other researchers using advanced ICT feel much the same; some decided to return to conventional research methods in order to continue with their career, which they consider is a backward step. Despite computing techniques having advanced dramatically in the last ten years, the use of ICT in art historical studies has not moved with the same speed.

Key Discussion Points

A question and answer session followed each presentation and a general discussion, chaired by Tim Benton, was held at the end. Informal discussion took place during tea breaks.

The following key points were addressed and discussed:

Digital tools for art historians

The discussion of digital tools was dominated by the issues concerned with images. Art History is based on comparison and comparison of images is an important part of many investigations. Bentkowska-Kafel adopted various techniques available in Adobe Photoshop for the purpose of formal, stylistic and iconographical analysis of pictorial compositions, but even this professional imaging software falls short of providing all the tools needed. Failing to locate an existing software package suitable for the study of architectural drawings, Benton wrote his own software in Visual Basic programming language and extended the facilities of a Microsoft Access database. It is apparent then that off-the-shelf computer products are not serving the art historian at the level required.

Problems relating to scaling and overlaying images, as well as magnifying details without losing the view of the whole, etc. received considerable attention. Tools for these basic techniques are not readily available. Scale is rarely applied to art images. They do not convey the relative size of objects when taken out of spatial context: looking at an image of the *Mona Lisa* we have no way of telling how big this picture is. Art and architectural historians frequently need to compare images to scale. The size of bitmap images may be adjusted manually, so that a fixed number of pixels correspond to a unit of physical measurement, as applied by Bentkowska-Kafel, but there is generally no practice of doing so. Individual art historians have tried to motivate programmers to develop suitable software, but the user demand is negligible and therefore does not justify the effort. Benton has been unable to persuade a programmer to turn the technique he has developed for adjusting the scale of images into a software package for wider use. Parallel solutions for dealing with differences in scale in cartography were suggested as a possible answer to the problem.

Effective use of digital images

Effective use of digital images in art historical research is hampered by a number of factors, including: lack of adequate provision of specialist software (see examples above) and technical support, as well as restricted access to high quality images. There is a need not only for better software for zooming and panning images, better techniques for comparison and annotating images and imaging processes, but also specialist guidelines for good practice.

Technical support

Examples of software developed specifically for art historians are rare. Attempts to develop such applications have generally not moved from experimentation to implementation (e.g. the Morelli image retrieval system developed by Professor William Vaughan in the 1980s). Art historians in the main have to resort to existing products, adapting them to the needs of individual projects (Bentkowska-Kafel used a content-based image retrieval system originally developed for the retailer Marks and Spencer). It is difficult to find professional technical support for small-scale individual research projects. The needs of art historians are often limited to extending the capabilities of existing software. These may not be conceptually or scientifically challenging enough for computer scientists. Collaborations between computer scientists and art historians are understandably only successful when the benefit is mutual. Apart from help offered as a personal favour, there is little incentive or formal support available within academia, and commercial help is beyond the reach of an individual scholar. (The quoted costs for converting Benton's database into a usable web resource were prohibitive).

Dissemination and sustainability of ICT-based research

Art History is a discipline where research success is measured by the number of publications, and where text and still photography continue as a publication standard. The most obvious benefits of digital

methodologies for art studies, such as the potential ease of use of images in great numbers (when not restricted by copyright) and the interactivity of multimedia, are the very barriers that make publication difficult if not practically impossible.

Copyright is a serious roadblock. The use of visual material is subjected to stringent terms. Academic and educational use of images is not synonymous in the UK with a waiver of the fees that are required by picture custodians (even when they do not hold rights to the material in their care), and these remain prohibitive when multiple images are required. The cost of using digital images is generally higher than prints (in November 2006 amounting to approx. £35 for a four-year online or CD-ROM use of an image of 3072 x 2048 pixels). Art historians seem to be penalized for promoting artefacts through their research.

There is also little understanding of analytical imaging processes and their possible benefits to scholarship. The terms of use of digital images purchased from UK museums and picture libraries typically restrict repetitive use of the same image or its details, and copying and overlaying images is regarded as 'a derogatory treatment' (examples of such terms were given). High-resolution images that are necessary for academic examination are very difficult to obtain. The terms of the online use of art images are particularly restrictive.

Researchers are facing the same problems, of copyright and ever-advancing technology which threatens to make their work technically obsolete. It is one thing to develop a digital tool or resource, and another to keep it functional in the long term. Researchers struggle to migrate digital outputs of their research to new media and keep digital tools and resources usable. Some have kept old software and various computers for viewing purposes. Web-compatible formats and online delivery is a solution for many projects, but often practically impossible owing to image copyright restriction. A website may seem a suitable alternative to publishing a book, but the option to register an academic domain is not available to individual authors. Academics with ICT skills are often employed on short-term contracts attached to research projects, and move from one HE establishment to another. They find it difficult to entrust their research to a specific institution and use it as a fixed host. Under current rules (confirmed by the UKERNA service on 28 June 2006), individuals are not permitted to register *ac.uk* domain names, although these would be far preferable to *org*, *net* or *com* extensions.

Publication and sustainability of doctorate theses with considerable digital content are posing a separate problem. When such theses are articulated in the format prescribed by convention (text illustrated with still images), their originality – a condition *sine qua non* of Ph.D. research – is lost. The UK regulations governing doctorates require that the thesis is submitted for examination and later deposited with the British Thesis Service as bound volumes of text. Where a CD with digital material is included, this digital component is not even mentioned in the British Library catalogue of Ph.D. theses.

Bentkowska-Kafel's research into anthropomorphic landscapes originated as a Ph.D. (completed in 1998); its digital methodology was considered as both a subject and delivery format (multimedia CD-ROM). For Mary Pearce, the multimedia format was particularly well-suited to her Ph.D. research into the relationship of colour and musical harmony in twentieth-century abstract art (completed in 2001). In both cases, as in a number of other Ph.D. projects, especially in the area of practice-based arts, digital methodology has been crucial, and impossible to convey through text. The validation of such non-paper written doctoral research needs to be looked at, and the potential of the computer for conceptual and visual analysis of art historical material needs to be recognized.

The theses in question are posing considerable problems for the British Thesis Service and other repositories which have been entrusted with the long-term preservation of doctoral theses. Recent digitization initiatives seem to have neglected the non-textual content. Anthony Troman of the British Library has confirmed that these issues do cause problems. However, ongoing work promises solutions in the future. He managed the British Library end of a project called Electronic Theses On-line Service, or EThOS. The EThOS project involves the British Library and UK Higher Education with funding from JISC

and CURL (and partners), and promises to deliver some 5,000 paper-borne UK theses as PDF documents by 2008. This is a much welcome development, but one which does not yet offers a satisfactory solution to the problem of preservation and dissemination of multimedia content. Information about the UK Thesis Digitisation Project is available at www.ethos.ac.uk/index.html and www.jisc.ac.uk/whatwedo/programmes/programme_digital_repositories/project_ethos.aspx (20 November 2006).

Technology is often considered a criterion of innovation in art historical research, as well as a factor contributing to products of research becoming obsolete. The latter should not forsake the sustainability of research outcomes.

Conclusion

The seminar allowed the speakers to address and discuss some of the issues in the use of ICT in art historical research, which they believe are important for the wider recognition, acceptance and application of computer-based methodologies by mainstream Art History. The seminar brought together a small audience of representatives of various parties engaged in art studies, preservation and dissemination of e-research, and hopefully contributed to a better understanding of the often complex issues involved, and the need for enhanced collaboration. It was particularly satisfying to have the representative of the British Thesis Service present and to be able to advocate the need for preservation of PhD theses submitted in a multimedia format. The participation of picture librarians offered an opportunity to renew the call for easing current barriers in the use of images in art historical research.