NeDiMAH Workshop: New Methods for Manuscript Imaging and Analysis
National Library of Wales, Aberystwyth, Wales
March 30th-April 1st, 2015

FINAL REPORT

Organisers

Professor Lorna Hughes, Chair in Digital Humanities, School of Advanced Study, University of London, Professor Andrew Prescott, AHRC Digital Transformations Theme Fellow, University of Glasgow, with Claudine Moulin, University of Trier.

Abstract

The workshop acknowledged the long tradition of the use of scientific aids in the investigation of manuscripts, and addressed the enormous opportunities for enhancing our understanding of the date, localisation, contents and genesis of manuscript sources through the use of new technological approaches, including RTI imaging, and the use of synchrotron light sources. Researchers now have a multiplicity of tools with which to explore problems in manuscripts, and further exciting new technologies are likely to become available in the near future.

These methods create enormous opportunities for scholars, but also tremendous challenges. Existing work of this sort is currently very fragmented and knowledge of the possibilities scattered. Among the issues considered in this workshop were how outputs of this research can be made available for analysis by a wider range of researchers, and the role of cultural heritage organisations, which now must make available new types of digital images. While many of the techniques derive from work in conservation science, repeated re-examination of ancient manuscripts using different techniques can raise preservation issues. This means moving far beyond the current provision of manuscripts that have been through 'mass digitisation', and moving to a more bespoke, 'slow digitisation' provision of images that are outputs of new types of capture.

The event took place from March 30th-April 1st, 2015, at the National Library of Wales, Aberystwyth, and Roderic Bowen Library, University of Wales Trinity St David, Lampeter, Wales.

The event was sponsored by the ESF Network for Digital Methods in the Arts and Humanities (NeDIMAH) and the Arts and Humanities Research Council Theme Leader Fellowship in Digital Transformations. Travel bursaries were awarded to five postgraduates/early career scholars.

Programme and speakers

Monday March 30th
Roderic Bowen Library, University of Wales Trinity St David, Lampeter
14.00 Introduction to the Roderic Bowen Library by Peter Hopkins, Special Collections Librarian, University of Wales Trinity St David
14.45 Hands on RTI demonstration, led by Professor William Endres, University of Kentucky

Tuesday March 31st
Council Chamber, National Library of Wales, Aberystwyth, UK

9.45 Welcome and introduction
10.00 Professor Kevin S. Kiernan, University of Kentucky, *Digging with Digits: the Excavation of Artifacts in Ancient Manuscripts*
11.30 Professor Koen Janssens, University of Antwerp will present two projects: the use of synchotron radiation on ferro-gallic inks; and the mobile scanning of Flemish and Venetian illuminated manuscripts.
14.00 Dr Polonca Ropret, Institute for the Protection of the Cultural Heritage of Slovenia, *Raman spectroscopy and cultural heritage artefacts*
16.00 Professor William Endres, University of Kentucky: *The Use of RTI scanning in the Study of Manuscripts and Medieval Artefacts*

Wednesday April 1st
Council Chamber, National Library of Wales, Aberystwyth, UK

9.45 Professor Lorna M. Hughes, School of Advanced Study, University of London: *Developing Research Infrastructures for Digital Manuscripts*
10.05 Professor Andrew Prescott, University of Glasgow: *Some Marginal Thoughts*
10.25 Dr Estelle Stubbs, University of York and University of Sheffield: *The Legacy of Manley and Rickert*
10.45 Hendrik Hameeuw, Dr. Lieve Watteeuw and Bruno Vandermeulen, KU Leuven: *When the details matter: acquiring, storing and safeguarding large interactive 2D and 3D data sets, from Mesopotamian cuneiform document to medieval manuscripts*
11.45 Discussion
13:15 Public lecture: Paul Russell and Myriah Williams, Cambridge University: The Black Book of Carmarthen: Minding the gaps

Registration was managed by eventbrite: http://www.eventbrite.co.uk/e/nedimah-workshop-new-methods-for-manuscript-imaging-and-analysis-tickets-16013816757

Scientific summary of the workshop.

The workshop began with an afternoon practical demonstration of RTI imaging, led by Professor Bill Endres. Working with collections from the Roderic Bowen Library at the University of Wales Trinity St David's, Lampeter, which were introduced by Professor Janet Burton, University of Wales Trinity St David's. These included a bible with illuminated initials, and a book of hours with marginal illustrations. Katerina Zinn, lecturer in Egyptology at University of Wales Trinity St David's, introduced Egyptological collections from a local museum, including a large wooden statue. Endres demonstrated the simple, basic equipment, and specialist software he uses for RTI image capture, with these items. Precision is in photography and directional lighting was key to capturing a successful image. 15 photographs were taken or each item, one at each section of the tripod: this simulates the physical dome of the original RTI set up. This is a highly innovative approach: the traditional RTI dome is unsuitable for heritage settings, so this approach has had a transformative effect, meaning that RTI images can be captured of manuscripts and heritage artifacts *in situ.* RTI can also shoot through glass, and clear conservator tape (this was successful in the case of imaging the Merthyr Fragment at the National Library of Wales in 2013). RTI imaging is an excellent was to explore how pigment is represented. For examples of this approach, see: *chadgospels.org.*

The software and viewers used by Endres are free to download form the CHI (Cultural heritage imaging group).

Kevin Kiernan (University of Kentucky) presented the new version of the *Electronic Beowulf*. He discussed in detail the requirements for image based scholarly editing:

- Access to high resolution facsimiles
- Simple generation of new projects
- Integrated image/text linking
- Easy to learn editing environment

Kiernan theorized that the reason there hasn't been a huge buy-in to digital image editions is a lack of interest in learning the new approaches, complicated by a lack of consistency of approach, even in the use of standards like XML. Kiernan also discussed how to present the images in a way that makes them integrated with tools that are the basis of the scholarship.

Koen Janssens, University of Antwerp, presented work developed at the Hamburg D: DESY synchrotron research centre, using powerful x-ray analysis of a Van Gough painting. The subsequent discussion focused on the need to unerstand the chemical structure of cultural heritage objects, in order to document what is authentic and what isn't, and how layers have been interpreted and respored previously. Janssens work is a clear example of the transformative potential of digital humanities work. However, the problem is getting conservators to agree to this sort of analysis.

Dr Polonca Ramen, Institute for the Protection of the Cultural Heritage of Slovenia, demonstarted her work using spectroscopy. The results she presented have been published in Special Issue of Journal of Raman Spectroscopy (http://onlinelibrary.wiley.com/doi/10.1002/jrs.4631/abstract). The scientific detail in Ropret's talk demonstrates how such studies of cultural heritage artefacts are akin to 'object archaeology', contributing to 'object biographies' of artefacts, a way of documenting how items are used/reused over time. Her presentation also leads to issues of conservation: what do we preserve, versus what do we restore? Which 'layers of history' are worthy of analysis?

Professor Bill Endres's dIscussions of the RTI imaging he had done on the NLW Hengwrt Chaucer was enhanced by the fact that attendees were invited to view the original manuscript after his talk, part of a selection of manuscripts made available by the NLW collections and conservation staff. This presented attendees with a valuable opportunity to compare 'original' manuscripts with the digital surrogates, and the organisers were grateful for this opportunity. Endres also introduced the idea of the copying history of a manuscript, and how digitisation is simply part of the continuum of copying that takes place throughout the history of a manuscript. Digitisation is in many ways just one stage in the 'biography' of a manuscript. Looking at the Litchfield gospels, Endres showed 1929 Photostat images done by NLW, and photographs taken by Courtauld Institute in 1962, and we see the emergence of the digital image as a 'rhetorical object'.

Advantages of RTI imaging were discussed: it is especially beneficial for dry-point glosses and pigments, especially where pigment loss has been sustained through flaking and chipping. RGB images were compared to RTI: RTI provides a sense of lifting pigments, and clumps of folium, as well as being effective for highlighting previously invisible text and images. RGB flattens things out – RTI gives much more information about the state of the pigments. The use of RTI images as a teaching tool was discusses: this approach is a good way to engage students with manuscript work.

The following sources of information were provided for attendees: Cultural Heritage Imaging: for RTI builder and RTI viewers, and West Semitic Research Project (WSRP): InscripttiFact RTI viewer. Future work was discussed, with the NLW Strata Florida slates, which can be seen as rough drafts of medieval manuscripts. Work done by Gabriel Bodard of King's College, London, working with the Curse Tablets in the British Museum was also seen as significant in this respect.

The presentation by Hendrik Hameeuw, Dr. Lieve Watteeuw and Bruno Vandermeulen, KU Leuven: *When the details matter: acquiring, storing and safeguarding large interactive 2D and 3D data sets, from Mesopotamian cuneiform document to medieval manuscripts demonstrated that* archaeologists have the balance between theory and method far better than digital humanities, and presented some innovative approaches for cross-disciplinary collaboration.

Estelle Stubbs went back to Manly and Rickert, and their work in creating new knowledge by way of 500,000 entries on collation cards: 'big data in an age of steam'. This was a very modern approach to manuscript scholarship. They adopted many advances to contemporary technologies, including working with NLW on creating Photostat images. This use of new technologies enabled the development of a holistic 'workshop' (originally called a 'laboratory') approach to the Canterbury Tales research, also using microfilm and facsimiles for the transcription work. Stubbs made the case for the retention of any monochrome copies of manuscripts, as they often tell us more about the manuscript at a specific point in time, especially those that may have been damaged. Similarly, techniques like ultra-violet imaging will shorten the life of a manuscript, so scholars should be encouraged to re-use available images where possible. Stubbs examined Hengwrt Chaucer Canterbury tales f. 85, where there is writing at the bottom of the page, clear in the RTI image.

Hughes gave a presentation on manuscript digitization at the National Library of Wales, as part of the continuum of copying technologies that have been used since the 1920s – from Photostat, the rotograph, to microfilm, to digital images. She drew on the Library's archive of correspondence with Manly and Rickert from the 1920's-40's as evidence for the history of copying interventions to the Chaucer manuscripts. Recent digital work was also presented, including hyperpsectral imaging of the NLW Chaucer manuscripts carried out by a team from Yale University on 2012.

Hughes also gave a summary of the themes presented at the workshop, and the role of heritage organisations in the adoption and dissemination of new methods for manuscript digitization, specifically the ways that digital captures have become part of the biography of a manuscript. Photostats, microfilms and digital captures all tell us new things about a manuscript, and are important interventions in the life of a manuscript (who commissioned the image, and why? What are the outputs? Do they contribute to the creation of new knowledge?). We can't anticipate what will happen to manuscripts in the future, and we also can't predict if new technology will give us new ways to read and understand manuscripts that we may have captured digitally: one of the great benefits of digital content is its use for rare and unforeseen purposes. Digitisation is more than just a technical endeavor, it needs a methodology, and theoretical reflection on the intersection of technical conditions and the requirements of critical scholarship (see Terras, in Fischer, Fritzer, Voegler, Kodikologie und Paläographie im digitalen Zeitalter 2 / Codicology and Palaeography in the Digital Age 2, Vol. Band 3, Norderstedt, Germany: Books on Demand. 2011).

Many different methods for digital capture and presentation of manuscripts are now becoming part of a Library's documentation and dissemination of manuscripts. However, if

the Library is to be more than just a digital photocopy service, direct engagement with scholars who can use these images for analysis and interpretation is a fundamental requirement. Libraries also need scholars to be involved in the dialogue of encouraging the adoption of new technologies – researchers can advise on candidate manuscripts for specific imaging and presentation methods, and provide annotations and shared texts. This way, all the data that libraries gather digitally about manuscripts can become integrated into the scholars' toolkit, part of the digital ecosystem that supports research.

Once manuscripts are available as digital images – especially those that capture different aspects of the image through photospectral and other technologies – a range of methods is available to support scholars who wish to ask new questions, or explore old questions in new ways. For example, the systematic analysis of similarities and distinctions in hands can be measured and calculated, enabling analysis on the number of scribes, processed used in creating manuscripts. It's also possible to analyze fragments for the purpose of reconstruction, as well as using hyperspectral and UV images to recover text. But even the ease of access to a large body of manuscripts from a collection enables the manuscript scholar to work in different ways – to take a more 'archival approach' to working through large quantities of manuscripts, captured in many ways, and ideally the related documentary materials should also be accessible to the scholar. To take advantage of this, we need to build bridges between expertise in the potential of digital imaging; scholars who are experts on the manuscripts; and expertise in digital methods that are used across the disciplines as they become familiar from other projects, in a sustainable way over the long term. We also need to draw on higher-level collaborations: institutional, disciplinary, and collections.

The future is a move away from 'mass digitization' a more holistic and collaborative 'slow digitization'. It is better to work slowly and aim to integrate all the extant captures of a manuscript, with digital just one piece of the whole 'biography': focus on depth, not mass. The role of heritage orgnaisations should be in making all these representations available, to acquire and disseminate the entire history of a manuscript, appreciating that there are many layers of data that can be added to add information about an archive. This next phase of digital manuscript research is therefore is not about of static tools and methods, but about fostering a more fluid environment of interdisciplinary co-production. The digital research infrastructures infrastructure to support this suggests the 'manuscript laboratory' envisaged by Manly and Ricker in 1939, perhaps presciently.

Follow up publication

The convenors have agreed to develop an edited volume of proceedings of the event, to be published in the Ashgate series, "Digital Research in the Arts and Humanities". The Workshop made it clear that there is a need for this. Funding for this will be sought from the ESF NeDIMAH publication budget.

Additional material

Storify of tweets from the event:
https://storify.com/karolinabadz/nedimah-workshop-new-methods-of-manuscript-imaging

Blog post about the event by early career bursary winner, Coutney Campbell, Postdoctoral Fellow at the Institute of Historical Research, University of London:
http://talkinghumanities.blogs.sas.ac.uk/2015/06/04/slow-digitisation-collaboration-and-dancing-alone/