Exploratory Workshop Scheme

Standing Committee for the Humanities (SCH)

ESF Exploratory Workshop on

Applying Semantic Web Technologies to Medieval Manuscript Research

Birmingham (United Kingdom), 30 March – 1 April 2009

Convened by:
Professor Wendy Scase [1] and Dr Orietta Da Rold [2]

SCIENTIFIC REPORT

EXECUTIVE SUMMARY

By Wendy Scase

This Exploratory Workshop was convened by Professor Wendy Scase (University of Birmingham, UK) and co-convened by Dr Orietta Da Rold (University of Leicester, UK). Co-sponsors were the University of Birmingham and the Australian Research Council Network for Early Europe Research, represented by Dr Toby Burrows (University of Western Australia).

The Workshop brought together specialists from the fields of manuscript studies, information and computer studies, and library science, and from both public and private/ industrial organisations, to analyse the problems and opportunities associated with medieval manuscript research and the Web and to develop a research agenda for addressing them.

Participants explored the potential of the Web to transform access to and understanding of medieval European manuscript heritage, and the problem of how the many discrete bodies of digitised data currently being produced can be harmonised and integrated in order to achieve this potential.

Key Outcomes

- Analysis of current problems and possibilities in European medieval manuscript research from perspectives that are international, interdisciplinary (involving manuscript specialists, library and information scientists, and computer scientists), and multi-sectorial (involving members of the research, library, and industrial/ business communities).

- Evaluation of current solutions to problems in Web-enabled manuscript studies, in particular, Web portals and standardisation protocols and analysis of their limitations.

- Leading manuscript research in a new direction, away from universal standards and towards the development of technologies that can mediate between different standards and languages.

- Setting in train a research agenda to harmonise distributed datasets without trying to impose a single portal and standardised metadata.

- Identification of ways in which Semantic Web technologies might be harnessed to achieve this goal.

- Agreement to co-author a 'Road Map' to set out a research agenda in this field and provide a context for specific research projects, and to co-operate in pursuing and promoting this agenda.

Background: Medieval Manuscript Research and the Web

Medieval manuscript heritage is vast and absolutely central to any understanding of European heritage and history. Yet it lags seriously behind that of printed books in terms of being made accessible over the Web. Projects such as Google Book and Google Scholar and Early English Books Online combine scanning and imaging technologies to provide immensely powerful searches over a vast body of printed material. The technology does not yet exist to scan manuscript text (though researchers are trying to do this), and the provision of images of manuscript text is inhibited by cost, copyright concerns, and a lack of ways of describing and encoding images to make them searchable. There is no unified list of medieval manuscripts (we do not know even roughly how many survive). Basic cataloguing information manuscripts often exists in very old (but still valuable) printed resources such as catalogues and handlists which are often not available over the Web. Today manuscripts are increasingly being digitised and manuscript catalogues being put online. There are many projects all over the world that are producing electronic outputs such as online catalogues of manuscripts and text corpora. However, there are still huge deficiencies in access to medieval manuscript heritage. Use of existing resources is limited by lack of knowledge about them, lack of multilingual access to them, and above all the problem that searches cannot be performed across them.

Summary of Proceedings

Participants recognised that if we could overcome these problems and harmonise and integrate such databases and corpora we could start to ask questions of an entirely different order and our knowledge of medieval heritage would be transformed. Participants evaluated examples of existing projects which seek to solve these problems, including portals and standards. Existing Web portals seek to provide central places where researchers can access various databases in manuscript studies. However, the Workshop found that in practice Web portals are rarely used – scholars may not know about them, there is no single accepted portal, and scholars tend to prefer Google and other search engines. Participants discussed the proposal that current projects to standardise descriptive vocabularies and tags such as those provided by the Text Encoding Initiative can also be problematic. Two researchers can use exactly the same tags in completely different ways. Databases are always produced with particular research purposes in mind, and those purposes affect the way the data is described and structured, even when standardised vocabularies are used.

Participants explored how to bring about harmonisation of distributed datasets *without* trying to impose a single portal and standardised metadata. Participants identified Semantic Web technologies as a possible means of permitting research across discrete datasets. Participants agreed to draw up a 'Road Map', a framework for specific research projects that would work towards this goal. It was agreed that the Workshop convenors Wendy Scase, Orietta Da Rold, with Toby Burrows, will serve as coordinators for future activities. Publications of the Workshop will be posted on the website of the Co-operative for the Advancement of Research through a Medieval European Network (CARMEN, http://carmen.eldoc.ub.rug.nl/). A follow-up meeting for participants and other interested persons (by invitation) will be held at the next CARMEN meeting, 11-13 September 2009 in Krems, Austria.

SCIENTIFIC CONTENT

By Wendy Scase

The aim of this report is to provide an overview of the Scientific Content of the Workshop and to present the individual contributions in that context. The accounts of the presentations have been compiled in the light of abstracts provided by the speakers (as well as with the help of notes made by Wendy Scase and Orietta Da Rold that include some verbatim reportage) but they are not definitive abstracts. Responsibility for any errors rests with the author of this report.

Session One 'Research Questions in Manuscript Studies'

The first objective of the Workshop was to review the current situation in the provision of Web access to medieval manuscripts across Europe. In the first session, 'Research Questions in Manuscript Studies', presentations about a number of current projects in manuscript studies were made. Participants investigated specific areas and ways in which the needs of European researchers and the nature of their research questions are not being met by current Web services. Ian Johnson (University of St Andrews, UK) spoke on 'The Possibilities and Limitations of Textual-Codicological Hermeneutics in the Application of Semantic Web Technologies to Medieval Manuscript Research', illustrating his presentation with the example of the project Geographies of Orthodoxy: Mapping the English Pseudo-Bonaventuran Lives of Christ, c.1350-1550 (an Arts and Humanities Research Council, UK (AHRC)-funded collaborative project between Queen's, Belfast and St Andrews Universities, UK). Dr Johnson emphasised that the project is interested in describing manuscripts *and* in analysing the texts they contain. He asked how hermeneutic categories (for example, terms used to describe the structure of texts, and inter-textual relations) could synergise with the development of intelligent Web-searching systems. He called for exploration and discussion of the potential and limitations of ontologies for developing codicology-friendly systems for the description of the internal mechanics of texts.

Brian Møller Jensen (Stockholm University, Stockholm, Sweden) spoke about the 'Ars edendi: Methodological Models for Editions of Medieval Texts: An Editorial Laboratory in an International Network'. He illustrated his presentation with reference to a project to produce a modified diplomatic edition of the complete twelfth-century lectionary from Piacenza, and identified how the Ars edendi programme might have input into the problems addressed by the Workshop. His work on identifying the sources for this text has made considerable use of electronic databases. However, he emphasised that traditional expertise such as that of philologists also remains essential to the interpretation of manuscripts.

Orietta Da Rold (University of Leicester, UK) spoke about a project on 'The Production and Use of English Manuscripts 1060 to 1220' at the universities of Leicester and Leeds UK, funded by the AHRC. She identified contradictory pressures on makers of electronic resources such as the catalogue of manuscripts her project is producing. On the one hand producers of resources need to bear in mind the needs of the scholarly community and the diverse uses which they might have for the resource. On the other hand, resources are often – perhaps always – produced with a particular project and set of research questions in mind. She argued that there were dangers in aiming to achieve uniformity in a research culture that cannot be described as homogeneous.

Francesco Lo Monaco (Università degli Studi di Bergamo, Italy) spoke about 'BRHV: Beyond the range of human vision: computer based elaboration for the analysis and use of manuscripts'. This presentation drew the Workshop's attention to the varieties of kinds of data likely to be available in manuscript research. The aim of the research project is to develop and evaluate non-invasive methods of manuscript analysis, for example, spectroscopic analysis of manuscript material to identify the inks and pigments used. A related project, also at Bergamo, is 'REMACCLA: REpertorium MAnuscriptorum Commentariorumque auctorum Classicorum Latinorum REpertorio dei MAnoscritti e dei Commenti degli autori Classici LAtini' which aims to survey instruments, created by the end of the fifteenth century, which allowed the transmission of texts of classical Latin authors.

Christian Müller (Institut de recherche et d'histoire de textes, Section arabe, Paris, France), spoke about 'The Project "Islamic Law Materialized" and its database'. He described how his team was developing a Web-based research environment for the study of Arabic legal documents (CALD: 'Comparing Arabic Legal Documents'). The goal is to compare Arabic legal documents from different regions (Muslim Spain to Central Asia) and periods (8th to 15th centuries) that cover a variety of subjects but belong to the same legal tradition. The aim of this phase of the project is to produce a typology of documents and to identify the formulas typically used in different kinds of document. The idea is that researchers will be able to use the formulary to assist them in reading, interpreting, and transcribing the heavily abbreviated documents. He suggested that this methodology might have applications in research on manuscripts of literary texts.

Christian Müller also read a paper by Paul Bertrand (Institut de recherche et d'histoire des textes, Orléans, France), 'Going beyond the Database: the Objectives of the Semantic Web for Manuscript Research' (Prof. Bertrand was prevented from participating in person at the last moment). Prof. Bertrand described TELMA, a project that aims to be a platform for online publication of all kinds of manuscript corpora. He identified a need for interoperability and transferable editorial and technical protocols. He welcomed the possibility of investigating Semantic Web technologies and stated that looking at the problem through a 'European optic' would be very valuable.

Wendy Scase (University of Birmingham, UK) spoke about 'Production and Analysis of Large Corpora of Manuscript Research Data', illustrating her talk with reference to two projects at the University of Birmingham on the manuscripts of the English West Midlands region c. 1300-1475, the online Manuscripts of the West Midlands catalogue and the Vernon Manuscript Project. Today, these manuscripts are held in many libraries. She stated that if we could bring them together as a virtual corpus, we could study them in new ways. For example, by finding links between manuscripts we could discover more about the organisation of manuscript production and how it fitted into the economy and society of the region. She identified issues raised by these projects as achieving long-term access to the data and integration with similar resources, sharing the project expertise, and getting the data exploited.

Session One: Discussion

The presentations on specific projects in session one gave rise to more general discussion about issues in Web access to manuscripts. Web technologies allow us the possibility of creating virtual collections and corpora

of all kinds. For example, we could re-unite all items of a medieval library now physically scattered in different modern repositories. Many tools are being created; some will inevitably disappear while others will prevail. Two kinds of corpus are being created, text corpora and catalogues. Should/ could the two kinds be linked? Description of manuscripts and their contents is very problematic. Descriptive terms vary across societies, cultures, and languages. Should provenance, for example, be recorded in terms of the name of the region where it was made, or the modern name of the region? If integration of datasets requires standardisation at some level this could problematic – new insights and knowledge are often linked with production of *new* categories.

Session Two 'Web Services and Medieval Manuscripts'

The second session addressed the topic of 'Web Services and Medieval Manuscripts', looking at current Web projects that are designed to support manuscript research. Zdeněk Uhlíř (National Library of the Czech Republic, Prague, Czech Republic) and Karel Kucera (AiP Beroun Ltd, Beroun, Czech Republic) presented 'Manuscriptorium – ENRICH: European Digital Library of Manuscripts'. Manuscriptorium Digital Library, started by the National Library of the Czech Republic and AiP Beroun Ltd in 2003, is an output of the Czech national program 'Memoriae mundi series Bohemica'. The aim is to create a virtual research environment. The project seeks to present digitized manuscripts from abroad as well as from national collections. The National Library of the Czech Republic coordinates with AiP Beroun Ltd a European project called ENRICH that intends to integrate manuscripts and other historical documents from almost all European countries. The presentation outlined the problems facing the project, for example, those related to variants in language and spelling and the possible solutions that it is hoped to develop using semantic and ontological approaches.

Claudia Fabian (Bayerische Staatsbibliothek, Munich, Germany) spoke on 'The CERL Thesaurus (CT)'. The thesaurus has been built up by the Consortium of European Research Libraries (CERL) since 1999 and is hosted by the Data Conversion Group in Göttingen. It is a freely available internet tool providing access to records relating to early printing and book history (from 1450 – c. 1830). This is a research tool that provides a thesaurus of different forms of proper names. The aim of the thesaurus is to overcome the problem of linguistic variation past and present, for example multiple variations on names (Munich, München). The tool has been developed for use with the Heritage of the Printed Book Database of CERL. However it can be integrated into different information environments, and therefore has significant potential for use in manuscript research.

Ivan Boserup (Det Kongelige Bibliotek, København, Denmark) and Elmar Mittler (Niedersächsische Staats- und Universitätsbibliothek Göttingen, Göttingen, Germany) presented and demonstrated the CERL Manuscripts Portal, a point of access to manuscript catalogues distributed in different institutions across Europe. They described the aims of the project and demonstrated its functions. The aim of the portal is to provide a highly structured 'meta-index' to digitally available information on the global written heritage. The idea is to produce a 'federation' of resources. This project makes use of the CERL Thesaurus which provides access to records in early printed book databases. The presenters identified an important issue faced by the project as the need to achieve critical mass in order to be successful.

Michael Pidd (University of Sheffield, UK) spoke on 'Manuscript Portals'. He provided an overview of the new Web technologies and associated research methodologies which could transform study of the medieval

manuscript, focusing in particular on approaches to interoperability (interoperability of access and interoperability of use) and Web services for those who are not technically minded. He argued that portals are associated with many problems. Portals are not in fact used by researchers, and there are competing portals, thus researchers need to use several portals, do not know where to look, and may not even know about some projects. Websites are being produced by very many research projects. Here the problems is that there is a huge number of competing websites, and also that interfaces provided by researchers always reflect the research questions and assumptions of the researcher project that produced them. He argued that instead of trying to create new websites and portals to solve the problem of accessibility and integration, researchers should devise ways of describing the structure of their data and new browsers should be developed that can interpret this metadata on behalf of researchers.

Saskia Van Bergen (Universiteit Leiden, Leiden, Netherlands) spoke on 'Applying Semantic Web Technologies to Medieval Manuscript Research: The Dutch Perspective'. She argued that it is important to think long-term and very large-scale as is happening in the Netherlands. She described Leiden University Library's efforts to provide access to its collections (medieval and post-medieval manuscripts, printed books, prints, photographs, maps and atlases) through the internet, and the development of the database Medieval Manuscripts in Dutch Collections, hosted by the KB/National Library of the Netherlands. She described a plan for digitization of all medieval manuscripts in the Netherlands, along with other material, whose working title is Libratory. She focused on the challenges and pitfalls of large scale digitisation projects. She asked what would have to be done to make the texts searchable as well as the images, and if it is worth transcribing all manuscripts, and whether manuscript data should be connected with data on incunabula.

Simon Forde (Brepols Publishers, Turnhout, Belgium) spoke on 'Commercial Database Services'. He considered how commercial and industrial organisations might engage with the priorities identified by the Workshop and what possibilities and problems are associated with the integration of commercially-provided reference material in projects designed to support manuscript research. Commercial and industrial database developers faced similar challenges concerning searchability, interoperability, and ontologies to those identified by other speakers. The materials developed by Brepols and other companies for commercial purposes might be able to be utilised to help integrate datasets and contribute to the development of thesauri. However, commercial interests would have to be taken into consideration, as the provision of such material is the outcome of huge investment by commercial companies.

Session Two: Discussion

General discussion arising from the papers in the second session considered the problems involved in trying to integrate data produced in the context of different business models, including the model of government-funded research which requires free public access to outputs, and the commercial model, where paid access to outputs is needed to provide a return on investment. It was agreed that whatever the funding model, projects attempting to integrate resources and enlarge access faced common problems of marketing and establishing market dominance in order to be successful.

Problems associated with the integration of datasets were identified. Variations (medieval and modern) in names, spellings, and languages need to be addressed. A name can mean different things at different times – for

example, a region's or country's boundaries may change, so the country name does not always refer to the same area. Object identifiers can help to overcome variations in names, including manuscript names, and spellings. Thesauri need to link to unique object identifiers rather than a 'standard' form. In addition, search *results* need to be multilingual, not just search *terms*.

Integration of datasets produces possible duplicates. The merging of records is a time-consuming process involving the identification and elimination of duplicates and results may be inaccurate. It is possible to enlist the aid of users to create or edit content, for example, using wikis. But editing user-generated content is necessary and this imposes an open-ended (often unfunded) burden.

Session Three 'Applications of Semantic Web Technology'

In the third session of the Workshop, participants heard from three presenters on the theme of 'Applications of Semantic Web Technology'. The aim of this session was to review the relevant research into Semantic Web technologies which are applicable to the cultural heritage domain. Antoine Isaac (Vrije Universiteit, Amsterdam and National Library of the Netherlands) spoke on 'Towards a web of medieval manuscripts?' He described how the Semantic Web infrastructure allows publishing, sharing and exploiting scientific data in a unified Web-enabled framework. With the World Wide Web there is no structure that links or mediates between websites. A Semantic Web, by contrast, is a web of data with links that describe the relations between the different resources. Links are created by means of vocabulary realignment. Where two resources use two different vocabularies, the Semantic Web creates links between them. The Web can also enable the linking of different vocabularies. He emphasised that applying Semantic Web technologies in the manuscript field could be a great opportunity to investigate and bring useful experience to bear on some generic Semantic Web research issues.

Cristina Vertan (Universität Hamburg, Germany) spoke on 'Semantic Web Technologies for managing heterogeneous data in manuscript repositories' with reference to the project *Teuchos: Zentrum für Handschriften- und Textforschung* of the Institut für Griechische und Lateinische Philologie (Universität Hamburg) in cooperation with the Aristoteles-Archiv (Freie Universität Berlin). The aim of Teuchos is to provide a Web-based research environment suited for manuscript and textual studies. This project recognises that humanities research has its own particular challenges. Descriptions in humanities research are not analogous to scientific taxonomy. One of the challenges is the mixture of heterogeneous data collections. The multilingual aspect gives an additional dimension, as materials in classical philology are written in many languages. The project team believes that Semantic Web technologies offer a powerful mechanism to handle these types of problems. She described briefly the data that the team wishes to integrate, the challenges associated with this data and showed which Semantic Web technologies may be used

Toby Burrows (University of Western Australia, Perth) spoke on 'Semantic Web and Medieval Studies'. Toby Burrows identified some priorities and key problems. He argued that researchers should start with integrating descriptions of manuscripts rather than with trying to integrate the contents of manuscripts (that is, transcriptions of texts). He identified a central problem as that of finding a way of tracing relationships between manuscripts and their 'manifestations' – the descriptions of the manuscripts and all secondary sources concerning

them. Such an endeavour needs to take into account the fact that scholarly opinion may change over time. For example, the geographical localisation of a manuscript's provenance may change as research progresses. He proposed that a key desideratum is an analysis of semantic categories in manuscript studies.

Session Three: Discussion

Issues and questions discussed included how far are humanities data different? Could we apply models from other subject domains? What should our priorities be? Should we start with the work of aligning vocabularies, with developing a thesaurus of text titles, with assigning standard identifiers to manuscripts, or with creating corpora of descriptions of manuscripts rather than of texts?

Session Four 'Planning Follow-up Activities'

The final part of the Workshop was devoted to discussion of the questions that had arisen, to identifying areas in which Semantic Web technologies have the most promise for medieval manuscript research, and to making a plan for elaborating a programme of potential future research activities in this field, including future meetings and publications. Specific activities will include: proof of concept projects – for example a pilot project that experiments with harmonising existing datasets based on those produced by the UK Medieval Manuscripts Research Consortium (which comprises manuscript research teams at the Universities of Birmingham, Glasgow, Leicester, Oxford, Queen's Belfast, St Andrews, York), is planned; exploration of how commercial resources might be integrated with publicly-financed resources; and projects to build capacity – to train PhD and post-doctoral researchers in environments and networks which bring together computer scientists, information scientists, manuscript librarians, and manuscript researchers from different European institutions and both public and industrial/ commercial sectors.

Participants undertook a review of the Workshop and assessed its outcomes and proposals as part of the final session. Participants agreed that there was a general consensus at the Workshop that research into Semantic Web could provide an effective solution to the problems identified and open up immense new possibilities in the study of Europe's manuscript heritage. They agreed that such research could also provide a model for other kinds of data. It was recognised that the aim of this proposed research was highly ambitious, significant, and far-reaching; it was nothing less than a global solution to a global problem. It was felt that the project would have sufficient credibility and authority to attract international support and the funding required to achieve the Workshop's aims.

Agreed Action Points

1.   It was agreed that the present report on the Workshop which would be written for ESF by Wendy Scase will be published on the CARMEN website (by Simon Forde).

1.   The Workshop convenors Wendy Scase, Orietta Da Rold, with Toby Burrows, will serve as coordinators for future activities.

2.   A 'Road Map' outlining a future agenda and aims for the project will be written by Toby Burrows with contributions from participants in their areas of expertise. The Road Map will set out general aims and specific projects that will contribute to achieving those aims. The Road Map will not set out a fixed itinerary towards

achieving the aims. Rather, specific projects will be attempted as and when suitable funding opportunities arise. The Road Map will provide an overarching narrative that will give the individual projects a research context.

3.　Specific Projects to feature in the Road Map:

    a.　CERL (Elmar Mittler, Claudia Fabian, and Ivan Boserup) and Brepols (Simon Forde) will liaise about possible joint projects between CERL and Brepols to integrate commercial and non-commercial data.

    b.　Michael Pidd will lead a bid for a pilot project to experiment with integrating the data produced by the UK Medieval Manuscripts Research Consortium.

    c.　Cristina Vertan, Antoine Isaac, and Toby Burrows will liaise about bids for projects to develop Semantic Web technologies for manuscript studies.

    d.　Wendy Scase will lead bid for building capacity in this area, for example to the Marie Curie schemes for an Initial Training Network to support the training of PhD and post-doctoral researchers on collaborative research projects.

4.　When specific plans have been developed, and the Road Map drafted, the convenors will approach the ESF about how to go forward and for advice on funding possibilities.

5.　Electronic communication among the group will be facilitated by the NEER Confluence networking site (by Toby Burrows).

6.　A follow-up meeting for participants and other interested persons will be held at Krems, Austria, 11-13 September 2009, under the auspices of CARMEN.

ASSESSMENT AND CONTRIBUTION TO FUTURE DIRECTIONS IN FIELD

      The Workshop initiates new approaches to a key problem in European medieval heritage studies. It offers a lead in the harmonisation of research data using Semantic Web technologies. The Workshop initiates a departure from approaches which demand a universal standard and sets in train moves towards the development of technologies that can mediate between different standards and languages. It takes a lead in bringing together specialists from industrial, commercial, library, and scientific and humanities disciplines internationally to collaborate on this agenda. A key outcome is the plan for a 'Road Map' towards the harmonisation of datasets using Semantic Web technologies.

FINAL PROGRAMME

Monday, 30 March 2009

11.00-11.30	Arrival, Registration, Coffee

11.30-11.45 **Welcome by Convenor**
Wendy Scase (University of Birmingham, Birmingham, UK)

Welcome to the University of Birmingham **Anne Pauwels** (Head of College of Arts and Law, University of Birmingham, Birmingham, UK)

11.45-12.05 **Presentation on Relevant Funding Opportunities**
Xavier Rodde (Research Office, University of Birmingham, Birmingham, UK. No ESF representative was able to attend.)

12.05-13.00 *Lunch*

13.00-17.45 **Afternoon Session: Research Questions in Manuscript Studies**

13.00-15.30 **Presentations on Specific Research Projects**
Ian Johnson (University of St Andrews, St Andrews, United Kingdom)**, Brian Møller Jensen** (University of Stockholm, Stockholm, Sweden)**, Orietta Da Rold** (University of Leicester, Leicester, United Kingdom)**, Francesco Lo Monaco** (Università di Bergamo, Bergamo, Italy)

15.30-16.00 *Coffee / tea break*

16.00-17.30 **Presentations on Specific Research Projects**
Christian Müller (IRHT, Paris, France)**, Paul Bertrand** (IRHT, Orléans, France – paper read by **Christian Müller**)**, Wendy Scase** (University of Birmingham, Birmingham, United Kingdom)

18.00-19.30 *Dinner*

19.30-21.30 **Evening Session: Web Services and Medieval Manuscripts I**

19.30-20.00 **Presentation 1 "Manuscriptorium/ ENRICH"**
Zdeněk Uhlíř and Karel Kucera (National Library of the Czech Republic, Praha, Czech Republic; AiP Beroun, Beroun, Czech Republic)

20.30-21.00 **Presentation 2 "CERL Thesaurus File"**
Claudia Fabian (Bayerische Staatsbibliothek, München, Germany)

Tuesday, 31 March 2009

09.00-10.30 **Morning Session: Web Services and Medieval Manuscripts II**

09.00-09.20 **Presentation 1 "CERL Manuscripts Portal"**
Ivan Boserup and Elmar Mittler (Det Kongelige Bibliotek, København, Denmark; Niedersächsische Staats- und Universitätsbibliothek Göttingen, Göttingen, Germany)

0920-0940 **Presentation 2 "Manuscript Portal"**
Michael Pidd (University of Sheffield, Sheffield, United Kingdom)

09.40-10.00 **Presentation 3 "Digital Special Collections"**
Saskia van Bergen (Universiteit Leiden, Leiden, Netherlands)

10.00-10.20 **Presentation 4 "Commercial Database Services"**
Simon Forde (Brepols NV, Turnhout, Belgium)

10.30-11.0 *Coffee / Tea Break*

11.00-12.30	**Morning Session: Applications of Semantic Web Technology**
11.00-11.20	**Presentation 1 "Semantic Web and the Cultural Domain"** **Antoine Isaac** (Vrije Universiteit, Amsterdam, Netherlands)
11.20-11.40	**Presentation 2 "Semantic Web and Classical Studies"** **Cristina Vertan** (Universität Hamburg, Germany)
11.40-12.00	**Presentation 3 "Semantic Web and Medieval Studies"** **Toby Burrows** (University of Western Australia, Perth, Australia)
12.00-12.30	**Questions and Discussion**
12.30-13.30	*Lunch*
13.30-17.30	**Afternoon Session: Planning Follow-up Activities**
13.30-13.45	**Presentation 1 "Aims of the closing session"** **Wendy Scase, Orietta Da Rold, Toby Burrows** (University of Birmingham, Birmigham; United Kingdom, University of Leicester, Leicester, United Kingdom; University of Western Australia, Perth, Australia)
13.45-15.30	**Discussion of relevant funding opportunities, follow-up activities, networking, collaboration**
15.30-16.00	*Coffee / tea break*
16.00-17.30	**Further discussion; listing of action points**
18.00-18.50	*Reception sponsored by the University of Birmingham School of English,* *Drama, and American and Canadian Studies; address by Judith Petts (Pro- Vice-Chancellor for Research and Knowledge Transfer, University of Birmingham)*
19.00-20.30	*Dinner*

Wednesday, 1 April 2009

07.30-08.30   Breakfast

End of Workshop and departure

STATISTICAL INFORMATION ON PARTICIPANTS

Early Career Researchers: 4

Gender: Female - 5; Male – 12

Country of Origin: Australia – 1; Belgium – 1; Czech Republic – 2; Denmark – 1; France – 1 (plus 1 who sent paper to be read); Germany – 3; Italy – 1; Netherlands – 2; Sweden – 1; UK – 4.

FINAL LIST OF PARTICIPANTS

Convenor:

1. **Wendy SCASE**
   Department of English
   School of English, Drama, and American and Canadian Studies
   University of Birmingham

Co-Convenor:

2. **Orietta DA ROLD**
   School of English
   Faculty of Arts
   University of Leicester

Participants:

3. **Ivan BOSERUP**
   Det Kongelige Bibliotek
   København
   Denmark

4. **Toby BURROWS**
   School of Humanities
   University of Western Australia, Perth
   Network for Early European Research
   Australia

5. **Claudia FABIAN**
   Benützungsabteilung
   Bayerische Staatsbibliothek,
   München
   Germany

6. **Simon FORDE**
   Editorial Office BREPOLS and Executive Director, CARMEN
   Turnhout
   Belgium

7. **Antoine ISAAC**
   Vrije Universiteit Amsterdam
   Department of Computer Science
   Amsterdam
   The Netherlands

8. **Brian MØLLER JENSEN**
   Department of French, Italian and Classical Languages
   University of Stockholm
   Sweden

9. **Ian JOHNSON**
   The School of English
   University of St Andrews
   St Andrews,
   United Kingdom

10. **Karel KUCERA**
    AiP Beroun, Ltd.,
    Beroun
    Czech Republic

11. Francesco LO MONACO
    Universita` di Bergamo
    Facolta` di scienze umane
    Italia

12. Elmar MITTLER
    Niedersaechsische Staats- und Universitätsbibliothek Göttingen
    Göttingen
    Germany

13. Christian MüLLER
    l'IRHT (Institut de recherche et d'histoire des textes)
    Paris
    France

14. Michael PIDD
    Humanities Research Institute
    The University of Sheffield
    United Kingdom

15. Zdeněk UHLIR
    National Library of the Czech Republic
    Praha
    Czech Republic

16. Saskia VAN BERGEN
   University Library
   Leiden
   Netherlands

17. Dr. Cristina VERTAN
    Institut für Griechische und Lateinische Philologie
    Dept. Sprach- Literatur und Medienwissenschaft
    Universität Hamburg

and Arbeitsbereich NATS
    Department Informatik, MIN Fakultät
    Universität Hamburg

One proposed participant had to withdraw and sent his paper to be read:

    Paul BERTRAND
    Institut de recherche et d'histoire des textes
    Orléans
    France