## International UDC Seminar 2013

### Conference programme at a glance

**Day One - Thursday, 24 October 2013**

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<tr>
<td>09:00</td>
<td>Registration, Coffee/Tea</td>
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<td>09:45</td>
<td>Conference opening: Welcome from M. I. Cordeiro (UDCC), E. S. van Eijck van Heslinga (KB), A. Slavic (Programme Committee)</td>
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| 10:00 | Keynote address: From the index card to the World City: knowledge organization and visualization in the work and ideas of Paul Otlet  
W. Boyd Rayward                                            |
| 11:00 | Coffee/Tea                                                                                 |

### Session 1: Challenges in visualization of knowledge
**Chair: Andrea Scharnorst**

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| 11:30| From trees to webs: uprooting knowledge through visualization  
Scott B. Weingart                                      |
| 12:10| Visualizing knowledge interaction in the multiverse of knowledge  
Charles van den Heuvel; Richard Smiraglia                |
| 12:40| Challenges of knowledge structure visualization  
Xia Lin; Jae-wook Ahn                                      |

### Session 2: Categorisation for retrieval, exploration and learning
**Chair: Richard Smiraglia**

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<th>Time</th>
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| 14:30| Looking at one million images: how visualization of big cultural data helps us to unlearn our cultural categories  
Lev Manovich                                     |
| 15:10| Sempre avanti? Some reflections on faceted interfaces  
Kathryn La Barre                                         |
| 15:50| How can users get the gist of a taxonomy using tag clouds?  
Nathalie Pinède; Véronique Lespinet-Najib               |
| 16:20| Coffee/Tea                                                                               |

### Session 3: Classification, interfaces and information architecture
**Chair: Xia Lin**

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| 16:50| How to design interfaces for choice: the role of classification in information architecture  
Luca Rosati                                        |
| 17:30| Ghost in the shell: navigation, meaning and place-making in information space  
Andrea Resmini                                      |
| 18:10| Drinks & nibbles (in the foyer)                                                            |

**Day Two - Friday, 25 October**

### Session 4: Visualization and navigation of knowledge structures
**Chair: Almila Akdag Salah**

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<th>Time</th>
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| 09:00| Memory islands: an approach for cartographic visualization  
Bin Yang; Jean-Gabriel Ganascia                   |
09:30 Exploring semantically related concepts from Wikipedia: the case of SeRE
   Daniel Hienert; Dennis Wegener (Germany); Siegfried Schomisch
10:00 The Homer’s list or How classifications can be displayed on tablets
   Dario Rodighiero; Giorgio De Michalis
10:30 Coffee/Tea

Session 5: Indexing languages, relationships and visualization
Chair: Sylvie Davies
11:00 From modelling to visualization of topic relationships in classification schemes
   Rebecca Green; Diane Vizine-Goetz (USA); Marcia Lei Zeng; Maja Žumer
11:30 Semantic visualization for subject authority data of Chinese Classified Thesaurus
   Wei Fan; Shuqing Bu; Qing Zou
12:00 Enhancing user browsing success through visualization of indexing terms
   Špela Razpotnik; Alenka Šauperl
12:30 Lunch
13:10 UDC Online demo

Session 6: Visualization in collection searching and browsing
Chair: Kathryn La Barre
13:30 Sorting documents by base theme with synthetic classification: the double query method
   Claudio Gnoli; Alberto Cheti
14:00 Classification and visualization: augmenting user independence and enhancing collections use
   Fabrice Papy
14:40 Easy categorization of large image collections by automatic analysis and information visualization
   Marcel Worring
15:20 Coffee/Tea

Session 7: Visualizing analytics of classification and collection metadata
Chair: Charles van den Heuvel
15:50 Data artefacts: tracking knowledge-ordering conflicts through visualization
   Matthew Battles; Yanni Loukissas
16:10 UDC in action
   Richard Smiraglia; Andrea Scharnhorst; Almila Akdag Salah; Cheng Gao
16:40 Panel Discussion
17:30 Conference Close

Posters
Chair: Andrea Scharnhorst
Cognitive approach in classification visualization: end-user study
   Veslava Osinska; Joanna Dreszer-Drogorob; Grzegorz Osinski; Michal Gawarkiewicz
Visualization and navigation of knowledge in pan-European resources: the case of The European Library
   Nuno Freire
Nederlab: visual analytics in a virtual research environment for humanities
   Junte Zhang; Matthijs Brouwer; Hennie Brugman; Matthijs Droe; Marc Kemps-Snijders; Jan Pieter Kunst; Nicoline van der Sijs; René van Stipriaan; Erik Tjong Kim Sang; Rob Zeeman
The CEDAR Project: classifying the Dutch historical censuses
   Ashkan Ashkpour; Albert Meroño-Peñuela
Paul Otlet (1868-1944) was a key figure in developing the Universal Decimal Classification (UDC) as a faceted classification that represented a new approach to knowledge organization. As a young man in the early 1890s he had become acutely aware of a looming crisis that was occurring as a result of the strains that were being placed on existing systems for managing the sources in which a rapidly, relentlessly, diversifying, ever expanding universe of knowledge was being recorded. What was needed for the effective organization, dissemination and retrieval of the information that these literatures both offered for consultation and obscured? Very early on Otlet became convinced that the idea of bibliography should be expanded to encompass not just written texts but whatever it was that contained information regardless of format, technologically-based expression or originating source. Whatever contained information, he suggested, should be called a “document”. The study of documents, the new kinds of processes that should be investigated to release, order, integrate and disseminate their contents, and the new technologies, systems and institutional arrangements that were necessary for these purposes he suggested should be called, “Documentation”. For him a key aspect of documentation was visualization, itself a kind of technological affordance. Visualization involved not only the use of conventional illustrative materials of various kinds but schematic representations such as drawings, charts, diagrams and graphs by means of which information could be visually represented, segmented, systematised, simplified and made instantly apprehensible at a glance. This notion is captured by the neologistic signification he gave to the term “atlas”.

W. BOYD RAYWARD is emeritus professor in the Graduate School of Library and Information Science of the University of Illinois and in the School of Information Systems, Technology and Management of the University of New South Wales in Sydney, Australia. He has held professorial and deanship positions in the Graduate Library School of the University of Chicago and the University of New South Wales. He was editor of the Library Quarterly from 1975-1980 and is currently co-editor with Alistair Black of Library Trends. His research examines the history of the international organization of knowledge. In 1975 he published the first full length study of Paul Otlet. He published an English translation of a selection of papers by Otlet in 1990. Recent studies have focused on Paul Otlet’s ideas in relation to hypertext and the beginnings of modern information science, on a number of utopian schemes of knowledge organization including H. G. Wells’s idea of a world brain, and, from an historical point of view, on the implications of digitisation and networking for libraries and museums.
From trees to webs: uprooting knowledge through visualization

The classification and visualization of knowledge have been interwoven for nearly as long as there are records of either. Unsurprisingly in the Judeo-Christian Greco-Roman world, visualizations and classifications most often originally aligned themselves in a branching tree of knowledge which conferred a sense of hierarchy and lineage on knowledge itself, an order which matched well with the structured cosmos of the time. These trees of knowledge spread and grew until they collapsed under their own weight by the late nineteenth century, leaving a vacuum to be filled by faceted classification systems and sprawling network visualizations. The loss of a single root as the source of knowledge signalled an epistemic shift in how knowledge is understood, the implications of which are still unfolding in present-day discussions of interdisciplinarity.

Visualizing knowledge interaction in the multiverse of knowledge

This paper seeks to integrate the outcomes of previous studies on early experiments of Otlet with the organization and visualization of knowledge with earlier presented ideas on the development of an elementary theory of knowledge interaction. The paper explores the question of how such a theory could be put to the test. After returning to the discussion on the recurrent theme of “likeness” in classification theory, the implications for information retrieval will be explored in two ways: empirically and theoretically. In our previous outline of an elementary theory of knowledge interaction in a multiverse of knowledge, we challenged historical readings of the universe of knowledge metaphor that neglected the significance of Universal Decimal Classification (UDC). Our next step will be to analyse two visualizations aimed at making classification of sciences compliant to the laws of quantum physics, and explore the possibility of combining these approaches with the UDC for information retrieval in the multiverse of knowledge and to creating visual representations of temporary interfaces to knowledge interaction.
Challenges of knowledge visualization

This paper discusses how knowledge structures should be mapped and visualized. Three different approaches to knowledge structure visualization are presented and discussed, including visualizing knowledge structures that exist in a conceptual space, visualizing knowledge structures that need to be extracted and learned from a conceptual space and visualizing knowledge structures through visual metaphors. Each of the approaches can be powerful and effective for different purposes and use of knowledge structures. Through several visualization prototypes we have built, we compare and discuss these different approaches and relate them to some common factors of knowledge structures, such as the knowledge domain, association, representation, organization, access & use and visualization methods. The paper concludes that a good understanding of the impact of visualization on these features is essential in order to use the power of visualization to support effective, useful and meaningful visualization of knowledge structures.

Looking at one million images: how visualization of big cultural data helps us to unlearn our cultural categories

How do we use data mining of massive cultural data sets to question our cultural assumptions and biases, and “unlearn” what we know? How can we do research with massive visual collections of user-generated content containing billions of images? What new theoretical concepts do we need to deal with the new scale of born-digital culture? In 2007, we established Software Studies Initiative (softwarestudies.com) to begin working on these questions. I will also discuss how computational analysis and visualization of big cultural data sets leads us to question traditional discrete categories used for cultural categorisation such as “style” and “period.” The talk will be illustrated with examples of our projects including analysis of 1 million pages from Manga books, 1 million artworks from deviantArt (online community for user-created art), 6,000 Impressionist paintings, and all paintings by Vincent van Gogh.

Sempre avanti? Some reflections on faceted interfaces

This paper summarizes observations of faceted interface developments in various environments such as: websites, library catalogue interfaces and two complex knowledge domains - film and folktales over a ten year period. Two persistent constraints that impede forward movement are identified: metadata quality and interface design. This paper will focus on the ‘wicked problem’ of interface design. Lessons drawn from the author’s corpus of observations suggest fruitful and creative areas for development of more robust approaches to faceted interface development.
How can users get the gist of a taxonomy using tag clouds?

The authors suggest that tag clouds offer an efficient way for visualization of information. They designed an experiment to test which kind of tag cloud construction in information representation is best suited for users from the point of view of perception. They suggest that the most important aspect of the visual representation using tag clouds is that they can make users aware of the prevalent topic or theme, but also of themes that appear less frequently. The authors present their original method for creating a taxonomy of hyperlinks which is based on lexical units that are selected to be hyperlinked on the homepages of organizations (e.g. companies or institutions). The authors then examine four different tag cloud layouts generated for such a taxonomy: sequential with weight frequency, sequential with no weight frequency, circular and thematic clusters. An experiment was designed with four groups of subjects to test these different layouts according to different criteria. For each layout, an eye-tracking device (the Toobii system) is used to measure visual attention. Following analysis and discussion of the results, the authors show how organizations can apply this approach strategically to their website in order to help visitors have an overview of the website’s main features, and have a better understanding of the organization’s activities or/and their business goals.

How to design interfaces for choice: Hick-Hyman law and classification for information architecture

In a market dominated by an increasing variety of products and information, we are constantly forced to choose among a large number of options, not only in the web but also in the physical world. On one hand, this availability is a richness we are not be prepared to give up easily; on the other the excess of choice often generates stress, and in turn leads to ‘non-choice’ or ‘non-purchase’. It is the so-called ‘paradox of choice’. The comparison between some aspects of human-computer interaction, such as those covered by Hick-Hyman law, and canons of library classifications such as those proposed by Ranganathan’s, shows however that the time and stress of choice does not depend so much on the number of options available, but overall on the way the choices are organized and presented. The ‘paradox of choice’ is therefore a matter of quality rather than quantity. Through concrete examples, the paper suggests some heuristics to improve the choice in menus, catalogues and interfaces in general, by acting on the architecture of the choices themselves.
Space and place are two very different concepts: one, the base experience of embodiment, objective, impersonal, undifferentiated; the other, a way of being “there” that includes memories, experiences, emotions, and behaviours associated with a specific context. While space simply “is”, place is an unstable, transient construct. The author points out that spatial reasoning shapes the way we perceive and understand the world: we not only get around with a map and compass, but we “get out” of difficult predicaments. We also navigate the Web, or “go to Google”. What about places then? If our house is certainly a place, what about Facebook? With an average 25 hrs/week spent online in the EU, does our sense of place stretch out from homes and offices to include our mobile phones, tablets and digital alter-egos in a continuum that permeates every moment of our lives? Should it? And if so, how is this different from the Internet we have known so far? Following this line of thought the author looks into filmic and videogame language, literature, comics, pop references and Japanese anime. He uses a number of examples to explain the transition from digital to post-digital. He argues that the old approach of a literal representation of reality will be replaced with a continuum of abstract grammars which will play a key role in place-making and navigation in complex information environments.

The term “Memory Islands” was inspired by the ancient “Art of Memory” which described how people in the antiquity and the Middle Ages used spatialization to increase their memory capacity. The method of “loci” (plural of Latin locus for place or location) consists of creating a virtual map and associating each entity to designated areas on the map. In this paper, we propose a new method in the field of automated cartography based on the notion of Memory Islands for hierarchical knowledge. We first describe our novel method for cartographic visualization of knowledge (e.g. ontology and its skeleton which is taxonomy), we then show how the technique of “Memory Island” helps to navigate through information contents to memorize their locations and to retrieve them. We also discuss the design principles of this approach. Finally, we present an experimental prototype that is intended to evaluate the psychological relevancy of Memory Islands. We present also some preliminary empirical results showing that the use of Memory Islands provides advantages for inexperienced users tackling realistic browsing and visualization tasks.
Exploring semantically-related concepts from Wikipedia: the case of SeRE

Daniel Hienert
Dennis Wegener
Siegfried Schomisch
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In this paper we present our web application SeRE designed to explore semantically related concepts. Wikipedia and DBpedia are rich data sources to extract related entities for a given topic, like in- and out-links, broader and narrower terms, categorisation information etc. We use the Wikipedia full text body to compute the semantic relatedness for extracted terms, which results in a list of entities that are most relevant for a topic. For any given query, the user interface of SeRE visualizes these related concepts, ordered by semantic relatedness; with snippets from Wikipedia articles that explain the connection between those two entities. In a user study we examine how SeRE can be used to find important entities and their relationships for a given topic and to answer the question of how the classification system can be used for filtering.

The Homer’s list or How classifications can be displayed on tablets

Dario Rodighiero
Sciences Po, Paris, France
Giorgio De Michelis
University of Milano - Bicocca, Milano, Italy

In the Iliad, Homer wrote a list of the scenes presented on Achilles’ shield. A list so long that many artists have attempted to create the shield, triggering a creative process to find a solution. In the same way librarians have been struggling for years to present knowledge classifications. A structure that has transmigrated from paper book to tablet computer following technological developments. The paper describes the results of an innovative research to display and interact with classifications using tablet computers. Since these mobile devices force the designer to keep things simple, the classification will be displayed as a list, one of the simplest ways of presenting information. Later the list will be enriched with its semantic structure to propose an application able to manage the screen rotation and the classification manipulation.

DAY 2 - Session 5
Indexing languages, relationships and visualization

Rebecca Green
Diane Vizine-Goetz
OCLC, Inc., Dublin, Ohio, USA

Chair: Sylvie Davies

From modelling to visualization of topic relationships in classification schemes

Although developed primarily for alphabetical indexing languages (such as thesauri and subject heading systems), the Functional Requirements for Subject Authority Data (FRSAD) conceptual model has been extended to classification schemes, with a class corresponding to FRSAD's thema, and a class notation and the hierarchically-contextualized caption of a class both corresponding to FRSAD’s nomen. This paper explores extending the FRSAD model to accommodate a topic-centred view of the Dewey Decimal Classification (DDC), in which topics are recognized as themas and Relative Index terms as nomens; a complex series of relationships involving topics and/or RI terms is also recognized. These subject authority data (which require local
extensions to MARC classification and authority formats) support different user groups, including - in the DDC context - editors, translators, classifiers, information professional intermediaries, and end-users. Use scenarios based on a topic centred view of the DDC require system assistance for, e.g., an editor’s revision of a topic’s treatment throughout the DDC and an end-user’s discovery of resources topically related to a known resource, but not necessarily assigned the same class number. Visualization strategies supporting these use scenarios are proposed.

Semantic visualization for subject authority data of Chinese Classified Thesaurus

The Chinese Classified Thesaurus (CCT), integrated from Chinese Library Classification (CLC) and Chinese Thesaurus (CT), is a widely used knowledge organization tool in libraries of mainland of China. In practice, CLC and CCT share a common database and are managed by the same management system for synchronous updates. For a long period, CCT has performed key functions in library cataloging and indexing. However, its internal complicated knowledge structure and relation mappings are hidden to end-users and need to be urgently adapted to the Semantic Web (SW) environment. This paper discusses semantic representations of CCT’s subject authority data, based on Simple Knowledge Organization Systems (SKOS) modelling and explores a dynamic semantic visualization interface for presenting CCT data, which can help users to learn and make use of CCT.

Enhancing user browsing success through visualization of indexing terms

Users may be overwhelmed by the linear presentation of subject terms describing bibliographic sources in catalogue records of COBISS, the Slovenian union library catalogue. About a third of all queries are subject queries, but understanding of subject description causes many problems for end-users and also for many librarians. The solution could be a properly designed web application based on ontology using visualization techniques to support subject description and retrieval. Our goal is to support the user in such queries by helping them navigate through large sets of retrieved records with tag clouds and similar tools for visualizing information. The first step is to transform the subject headings list. The hierarchy and relationships can be based on UDC notation. A search for a subject heading would retrieve a set of records, which would be represented in the final view either with the image of the book cover or with the bibliographic reference and abstract of a journal paper. The tools can also help with cataloguing and indexing. We believe that new features in browsing and indexing in a new generation OPAC could enhance both users’ experience: that of cataloguers’ and end-users’.
Classification offers a unique power in allowing for systematic sorting of information items, thus playing an important role in the visualization of document contents and their relationships in the process of information retrieval. The majority of documents are about combinations of more than one concept. Therefore, classification notation representing the content has to be synthesized. As a classifier combines two or more classes from the schedules, the citation order of the notation elements affects the position of the document in sorted display. Among the concepts discussed in any document, a base theme and several particular themes can be identified. A general rule is that the notation representing the base theme should be cited first, thus producing a “helpful sequence” of compound classmarks. We propose a general method of information retrieval based on a double query combined with an appropriate systematic result display: classmarks starting with the searched concept should be displayed before those having it as an inner part. This principle is discussed on the examples of a simple interface for browsing digital assets currently being developed at the University of Pavia, and of ISKO’s Knowledge Organization Literature online search interface.

Information & Communication Technology (ICT), including Web Technology, are poorly exploited in French academic libraries, in general. They are limited to the library information systems (which are mainly for expert users, such as librarians, and anecdotally for end-users with an OPAC dedicated to document retrieval) and a very conventional federated Web portal for information retrieval from online databases. Nevertheless, the complexity of a university library has continued to grow and shows that inadequately trained users have great difficulty accessing collections. However, since the advent of Web 2.0, many new original and ergonomically enhanced interfaces have appeared and proved to be useful for navigating complex websites, reducing information and cognitive overload. The Visual Catalog, a new OPAC generation, was developed to help increase the use of library collections and improve users’ ability to retrieve information. The results of studies of two academic libraries implementing the Visual Catalog solution have confirmed improvements in user experience. This Web catalog which links up classification data, authority file and other essential UNIMARC data is currently used by six French universities.
Easy categorisation of large image collections by automatic analysis and information visualization

A large part of our history as well as our daily lives is captured in visual data. Understanding visual collections requires careful categorisation to reveal expected as well as hidden relations. Performing this categorisation manually is a demanding and cumbersome process. On the other hand automatic methods still have limitations in performance. An optimal approach brings together the power of automatic bulk categorisation with detailed and careful expert annotation. In this paper we show how advanced visualizations can aid the categorisation and subsequent exploration processes.

DAY 2 - Session 7

Visualizing analytics of classification and collection metedata

Marcel Worring
University of Amsterdam, The Netherlands

Data artefacts: tracking knowledge ordering conflicts through visualization

Matthew Battles
Yanni Loukissas
metaLAB at Harvard, Harvard University, Cambridge, MA, USA

Changes in the technical and social dimensions of knowledge infrastructures are bringing diverse ontologies, classification schemes, and orderings of knowledge into contact and conflict with one another. A particularly energetic scene for this struggle for coherence is taking place in the library world, where emerging technical considerations - in particular the growing desire for open data formats and the development of APIs (application programming interfaces) that make metadata in library information systems programmatically accessible - render local variations in classification schemes problematic for librarians and their patrons. A fruitful site for observing these dynamics is the Digital Public Library of America (DPLA), a project seeking to make national digital scientific and cultural resources comprehensively accessible. As the DPLA brings digital collections from various institutional settings together, classificatory principles that organize those materials in their home collections come into contact and even conflict with one another. This paper identifies conflicts in knowledge ordering revealed in the development of the Digital Public Library of America, and explores what such “data artefacts” can tell us about varying cultures of collecting across American UDC in Action institutions of cultural heritage.
UDC in Action

Richard Smiraglia
School of Information Studies, University of Wisconsin, Milwaukee, USA

Andrea Scharnhorst
Data Archiving and Networked Services, Royal Netherlands Academy of Art and Sciences, The Netherlands

Almila Akdag Salah
University of Amsterdam, The Netherlands

Cheng Gao
Dalian, China

The Universal Decimal Classification (UDC) is not only a classification language with a long history; it also presents a complex cognitive system worthy of the attention of complexity theory. The elements of the UDC scheme: main numbers, auxiliary numbers and connecting symbols are combined into symbolic strings, which in essence represent a complex networks of concepts. This network forms a backbone of ordering of knowledge and at the same time allows expression of different perspectives on various products of human knowledge. In this paper we look at UDC strings taken from library catalogues. Specifically, we analyse classmarks from the UDC authority file of the University Library in Leuven and an extraction of UDC numbers from the OCLC WorldCat. Comparing those sets with the UDC Master Reference File (UDC MRF), we look into the length of strings, the occurrence of different auxiliary signs, and the resulting connections between UDC classes. We apply methods and representations from complexity theory. Mapping out basic statistics on UDC classes as used in libraries from a point of view of complexity theory bears different benefits. Deploying its structure could serve as an overview and basic information for users among the nature and focus of specific collections. A closer view into combined UDC numbers reveals the complex nature of the UDC as an example for a knowledge ordering system, which deserves future exploration from a complexity theoretical perspective.

DAYS 1 / 2
Posters

Cognitive Approach in Classification Visualization: end-users study

Veslava Osinska
Joanna Dreszer-Drogorgob
Michal Gawarkiewicz
Nicolaus Copernicus University, Torun, Poland

Grzegorz Osinski
College of Social and Medial Culture, Torun, Poland

Chair: Andrea Scharnhorst

Visualization of scientific information extends the possibility to explore how the science is organized and change over time. Particularly classified data include a great potential of discovering the structure and dynamics of specified domain. The authors applied tested and previously presented conception of ACM CCS (Computing Classification System) classification mapping into a sphere surface. This visualization layout could be mainly used as a multiperspective analytical tool of classification structure. Classification sphere also might be considered as an ergonomic interface for exploring scientific resources as well as information retrieval. Classified documents form patterns according to their semantic similarity. Obtained graphical representations deliver quantitative material for analysis of classification development and dynamics. The poster illustrates how the authors’ attempt to find reliable tools to evaluate this spherical visualization design. It also shows the interface used to surveyed the distinct groups of users, who were asked about key aspects of visualization layout.
Visualization and navigation of knowledge in pan-European resources: the case of The European Library

The European Library provides access to research materials held in the collections of Europe’s national and research libraries. Its most visible service is a portal, which provides for searching and browsing across libraries, collections, bibliographic records, digital objects and full text contents. This centralization of resources should enable their access under a unified knowledge organization system, but due to the diversity of languages and knowledge organization systems in use across European libraries, data mining technologies are being applied for automatic linkage of subject information. Current results are drawn from the project Multilingual Access to Subjects (MACS), which produced manual alignments between three major systems: the Library of Congress Subject Heading (LCSH), the Répertoire d’autorité-matière encyclopédique et alphabétique unifié (RAMEAU) and Schlagwortnormdatei (SWD). On-going work is targeting wider coverage of subject systems, by exploring the alignment of language independent subject classification systems, such as Dewey Decimal Classification and Universal Decimal Classification. Future work will address the integration with digital humanities research infrastructures, and further study how digital humanities researchers perceive the value of the resources of The European Library and Europeana, where it is expected that knowledge organization systems and ontologies have great relevance.

The CEDAR Project: Classifying the Dutch Historical Censuses

The censuses are a rich source of historical information for researchers providing demographic, social and economic structures, yielding a wealth of data on many issues in the course of time. The Dutch historical censuses are currently digitized, but notoriously difficult to compare, aggregate and query in a uniform fashion: meaningful historical information is currently hidden in thousands of disconnected Exel Files and over 2,300 tables of aggregated data. The CEDAR project (eHumanities group) aims at enabling greater access and use of this dataset by applying a specific datamodel (exploiting the Resource Description Framework RDF technology), to make census data interlinkable with other hubs of historical socioeconomic and demographic data; and various harmonization practices. A large part of census data harmonization depends on the classification of the data. Querying these RDF data, we create visualizations in order to explore the thousands of variables in our data set and create bottom up classifications for housing variables, occupations, religious denominations, and so on. These visualizations correspond to different moments in history. We leverage animation techniques to display the conceptual changes that modified the social landscape in fundamental centuries of Europe’s history.
Nederlab: visual analytics in a virtual research environment for humanities

Nederlab (www.nederlab.nl) is a virtual research environment or laboratory for research on the patterns of change in the Dutch language and culture. Linguists and historians could use Nederlab to research Dutch language and cultural heritage by searching for and having interactive access to large amounts of historical texts and rich and structured metadata describing these resources. The text collections covered by Nederlab include literature i.e. fiction and non-fiction resources, massive amounts of newspaper articles, and the list of collections is set to increase. We demonstrate as example a concrete scenario for literary scholars, and show when, how and which visual analytics on metadata are powerful tools for exploring, finding, collecting and analyzing these texts for (historical and language) research. This includes visualizing the temporal and spatial dimensions for interactive search, and other contextual information such as the names and gender of authors, and comparative analytics of selected results.

Junte Zhang
Matthijs Brouwer
Hennie Brugman
Matthijs Droes
Marc Kemps-Snijders
Jan Pieter Kunst
Nicoline van der Sijs
René van Stipriaan
Erik Tjong Kim Sang
Rob Zeeman

Meertens Institute, Royal Netherlands Academy of Arts and Sciences, The Netherlands

International UDC Seminar 2013 “Classification & Visualization: Interfaces to Knowledge”, takes place on 24-25 October 2013 in the National Library of the Netherlands, The Hague. This was the fourth biennial conference organized by the UDC Consortium.

Conference Chair: Maria Inês Cordeiro, Vice-Chairman, UDC Consortium
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