

Report from 3rd NeDiMAH infoviz workshop

Visual Tools and Methods in Digital Humanities: Capturing, Modelling, Reading, and Thinking about Knowledge Creation...

7-8th of March 2013 in Umeå, Sweden.

Why and how do we use visualisation in our work?

The workshop explored visual components in digital environments and interpretative research tools and queried the shifting intersection between descriptive and analytical uses of visualisations. We discussed 'new' readings both within and beyond traditional textual modes, and questioned shifts in representation within the digital sphere. This 'reading' is a part of the whole research process. However there is a need to increase the awareness and conceptual thinking about how we form our research with visual methods.

The workshop discussed critical reading principles both for research itself but also for creating digital tools for different aspects of the research process. The workshop was organized so participants had prepare themselves by reading selected papers in advance, thereby making it easier to understanding the different steps involved in a range of research methods and how different decisions affect the knowledge we aim to create. The workshop gathered 11 participants mostly from the NEDIMAH working group. There were also guests from other working groups of NEDIMAH as well as other invited expert participants.

In the workshop we shared a variety of perspectives on how to use, and how to reflect upon the use of visualization in the humanities. The participants shared presentations and had prepared themselves by reading selected contributions and also by preparing comments and questions. This framework facilitated an active and participatory engagement from the beginning, as each person had read and thought about the others' work prior to the meeting. Moreover, all the speakers gradually embedded the previous presentations in their talks, using them as examples or terms of comparisons.

This critical engagement was invaluable as it allowed participants to move beyond a surface description of their research and method, into comparative analyses from which shared points of concern and interest emerged.

While preparing and reading others' contributions the participants tried to consider the different phases of the research process, so questions and comments could be consider the wider context of information visualization.

Such research phases were identified as:

- the formulation of the research question,
- data capturing, modelling and representation,

- selection of data,
- modelling of data,
- modelling search, query conditions and possibilities
- visual representation for descriptive and analytical purposes,
- Communication of findings in publication and for peer-reviewing.

Overall we aim at aligning the finding to the planned survey of NeDiMaH in order to make the result easier to communicate the results. Therefore the workshop started with a overview of the work with the Survey and how it could be used to collect knowledge that is valuable for our work and for the scholarly community.

The areas of research covered different area of humanistic research, such as:

- Representing hidden elements in city landscapes for urban planning,
- Modelling and representation of spatial and temporal uncertainty
- The role of perception and the effect of thinking in 3D.
- Visual methods of linking entities in networks with uncertain sources
- Visual methods of seeing patterns and entities in statistical data for example with spatial support
- Reflecting and debating upon the aesthetics in dataviz
- Accessing and evaluation of interfaces for faceted browsing

Detailed workshop results

In the section below there are short summary of the different contributions along with the discussions that was followed after each presentation. Where possible questions and comments are attributed to the persons having comments and questions.



Orla Murphy shared the work of the upcoming NEDIMAH survey, which is part of an effort to map methods and increase the understanding of the methods used by scholars.

Aim:

- **"To have an understanding of how Digital Arts and Humanities scholars are conceptualising and using data and visualisation in their research"**

Bucharest Meeting 2012

Rationale

- **In the Arts and Humanities 'everything is dynamic, attested, contested and researched' digital tools and methods in the Arts and Humanities are evolving to address a variety of research questions in multiple domains. This questionnaire is designed to assess the use of the variety of Digital Methods in the contemporary discourse.**

Contributions were made to the survey – and the methodology by the group. They have been incorporated into the text and will be integrated into the context. Beta version is viewable here: <http://piratepad.net/jGHlfjEGfn>

Mihaela Harmanescu shared findings about how in recent years, in urban planning and landscape design practice, new digital technologies have evolved from being simply representational tools invested in the depiction of existing models of urban space to becoming significant performative machines that have transformed the ways in which we both conceive and configure space and material.

Interesting questions were raised about what types of maps were used by Philip Buckand—for example maps of Romania over a decade old—so accommodation was made for discrepancies. Rolf Hugoson asked how visualisations impact the changing role of an architect? Shawn Day's question related to temporality and how it is dealt with in the image. Gethin's question was about context and perspective from the person taking the pictures. Mihaela responded that there is a visible difference, between the students, urban planners, geographers, architects, landscape architects in their view.

Shawn also asked a question regarding the draping in the 3-D visualisation. Orla Murphy asked a question about aesthetic measures in the model

Valeria Vitale from KCL noted in her presentation how people respond and remember, was very interesting. She referred to surveys conducted and to the construction of narrative, saying there was a good example from Mary Beard, Pompeii (2008), and gave Victorian examples of guides, where the power of uncertainty was a strategy of engagement.



Vitale situated her work in context using the example of Orpheus' dog, and then turned to a consideration of digital virtual environments – building, fresco, mosaics, and other artifacts related, and artifacts created from documentation that no longer physically exists. She cited (Merriman 2004) work on narratology. A combined approach was advocated – to be an inspiration to archaeologists, noting that it is not possible to understand the use of an object without considering its context

Vitale shows that studying the past does not mean collecting facts but is a process of making and testing hypotheses. In the discussion Thely responded that "the truth is hidden"

(Socrates). An excellent discussion ensued centered on game, theory, editions, layers, interactivity and more. Murphy mentioned both digital narratives and Ivanhoe (online game) in this context.

Many themes emerged, such as decisions about what to leave in and leave out in terms of perception and data quality. The important engagement with uncertainty was also discussed and the question about how much do you encourage users to engage. Their user engagement allows them to fill the gaps, not 'buy in' to a prepackaged story. There was an agreement among the workshop participants about the use of open and linked data and that by allowing users to write their own story reusing data and playing with uncertainty, the engagement was better, more memorable. It was also noted how great it is that there is so much work with linked data.

Gethin Rees shared that there are lots of inaccuracies in existing maps that 'convey an unwarranted air of reliability.' This makes it difficult to revisit spaces with this veneer of reliability – 'they have an air of objectivity.' Rees returned to the theme of uncertainty. His work engages with this in defining the object of study (representing the data as they stand) and then by visualising spatial and temporal uncertainty – where references are vague or ambiguous.



Gethin showing the website www.byzantinejewry.net

Everyone recognized that in this work the representation and reduction of data (impossible!!) is necessary, but it is also necessary to try as much as possible to achieve a good representation. At present the MJCB-project is choosing to handle uncertainty of different types with caution. They have created a system of symbols for temporal uncertainty, transparency, and opacity in order to communicate to the user. The MJCB-project only uses evidence and events that can be located spatially, as they think that the spatial representation is vital to users' interpretation in the site.

One of the project's aims is to get over the problem of GIS masking uncertainty. So in terms of spatial data: Toponym can refer to multiple locations and may refer to a known location. Gethin Rees gave two examples of ambiguous data--at Marathia and at Rhodes, the island or the town. This is an excellent demonstration of the methodology employed to address the issue of uncertainty in spatial data.



The workshop participants raised questions about how it would be used as a research environment and to what purpose? Gethin explained the use case foreseen as well as it linking to Pleiades and to Pelagios. This is a real strength according to Rees so it will make it more visible (previously a niche area) and more accessible, viable and hopefully *used* so that this minority religion will be considered in the scholarly discourse.

Shawn Day – asked about use of opaque reticules... the discussion moved to thinking about how we represent spatially uncertain data so the Marathia example ended up being an outlier, for Rees, they thought at the outset that there would be more spatially uncertain data. It was agreed that a legend was missing and needed in the system.

The participants agreed that the “default-representation” without uncertainty was important and good. So far in testing of the system there has been a good response to the

simplicity. For example there was previously a time-bar but that was removed and temporal information was communicated using textual representation. Marten During commented that it is very important to also map the gaps. The participants stressed and agreed that the research should define what complexity the technology should handle.

Fredrik Palm described how the Rock Art project has created, with a small grant – a rock-carving database and user interaction available at. <http://rockart.humlab.umu.se>



Palm reported on a case study and described a small school, with rock carvings nearby, where it conducted using video observations – including an introduction about how to use the system. Palm reported the different and alternative methods user could use:

- 1 Game, challenge based learning
- 2 Crawling hyperlink
- 3 Google search
4. Database browsing

Palm remarked that known tools are used more frequently, and described the importance of having multiple access channels motivating students with examples to overcome the initial barrier and linking the system to google-index allowing alternative modes of exposing the

data as well as making it easy to make examples for sharing. The system should be easy to use since users are lazy and normally follow the ‘path of least resistance.’

One suggested simplification that was a result of the user study was to get rid of the hierarchical descriptions and flatten the structure. This challenge encourages the use of this system to enable better readings of the rock carving in beginner users. The application is also meant for researchers, so in the list of data more advanced usage is hopefully still possible.

In the discussion among the workshop participants Gethin was asking about the use of it the system, ie who uses it and why? Gethin suggests promoting it to Richard Bradley. Palm responded that they wanted to improve scholarship in the humanities to be able to ask new questions in new ways. Palm remarks that sometimes technology creates problems as well as solving them,

In the presentation by Nicolas Thely he discussed “bas def” studies about low resolution aesthetic. Thely introduces the digital turn of the aesthetic ebook, (Thely 2011). He refers to the work within visualisation of many theorists and scholars such as Manuel Lima, Jacques Bertin, Edward Tufte, Lev Manovich , Bruno Latour – Mapping Controversies.

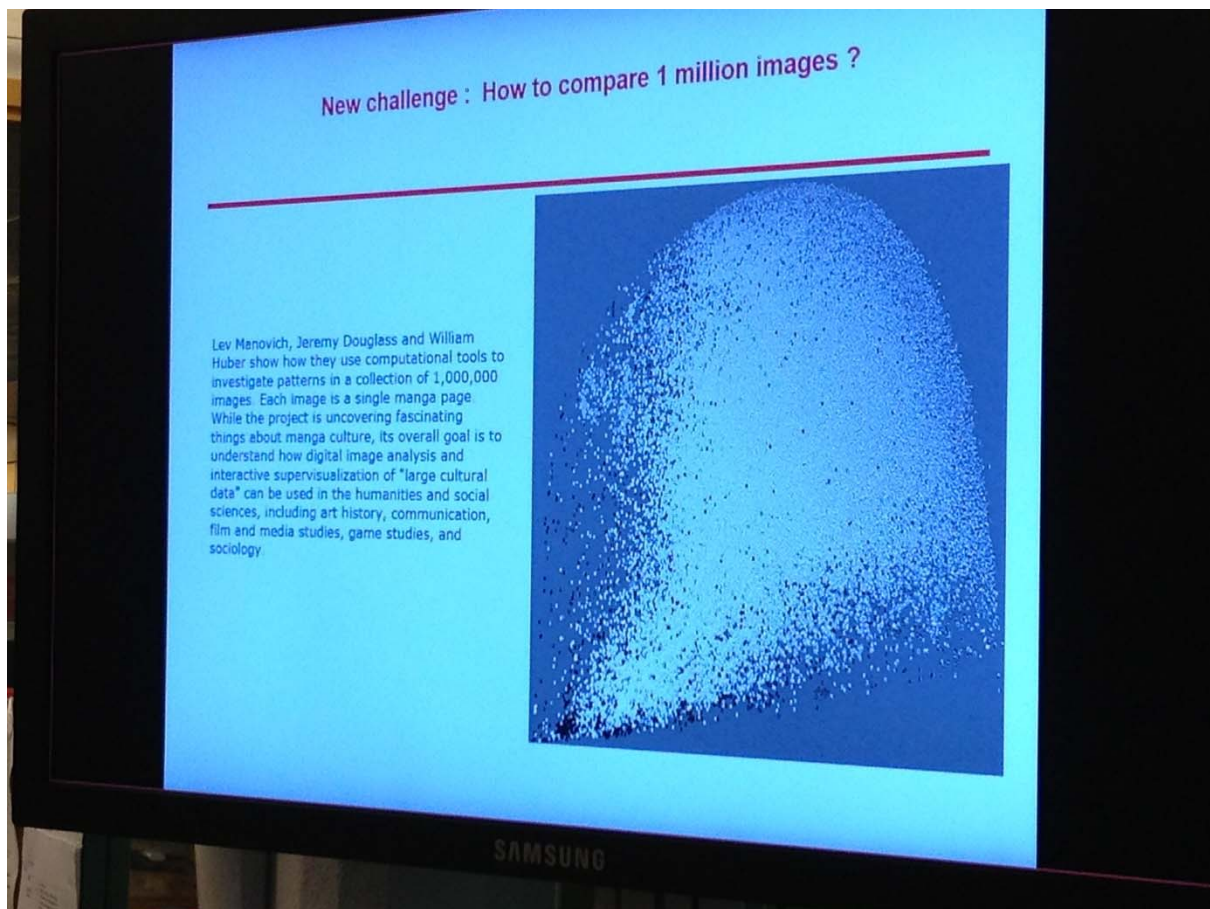


Thely asks the key question: “What about concept”? Thely refers to Gilles Rouffinaut to contextualize the question. Also he looks at Augmented Reality AR, and mentions “Do it yourself” approaches for example games. Thely also referred to Rwan Mahe and “dynamic la

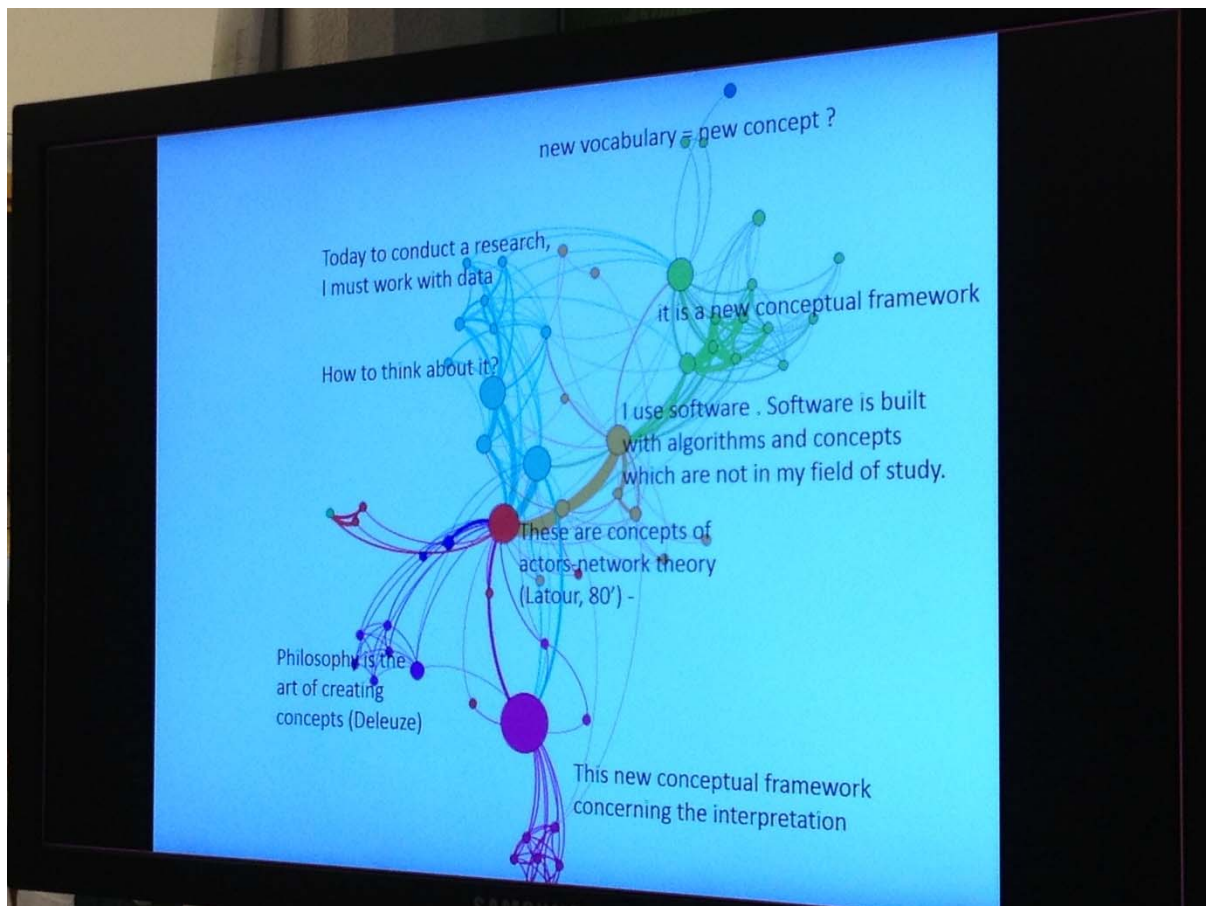
critique: art et pratique". There is a general opinion that Art Criticism is dead, Thely provides evidence of Art Criticism's vitality. He looks to visualisation to express this – and undertakes "visualizing before seeing and analyzing". His methodology involves using/changing tool to Gephi, adapation using Google refine and table to network operations

Thely shared experimental work with visualization and further adaptations using the tool Inkscape. This work process lead Thely to the question "Why and how we use visualization in our work..."

Nicholas continued elaboration/discussion about the practice of distant reading as the best approach.



Thely urges participants to test hypotheses, make new arguments



They's work concerns the principles of knowledge and causality, and his focus is on the professional art critic. In his analysis of text that came from official news article. He did not look initially at blogs or online work since the focus was not the new amateur art critic.

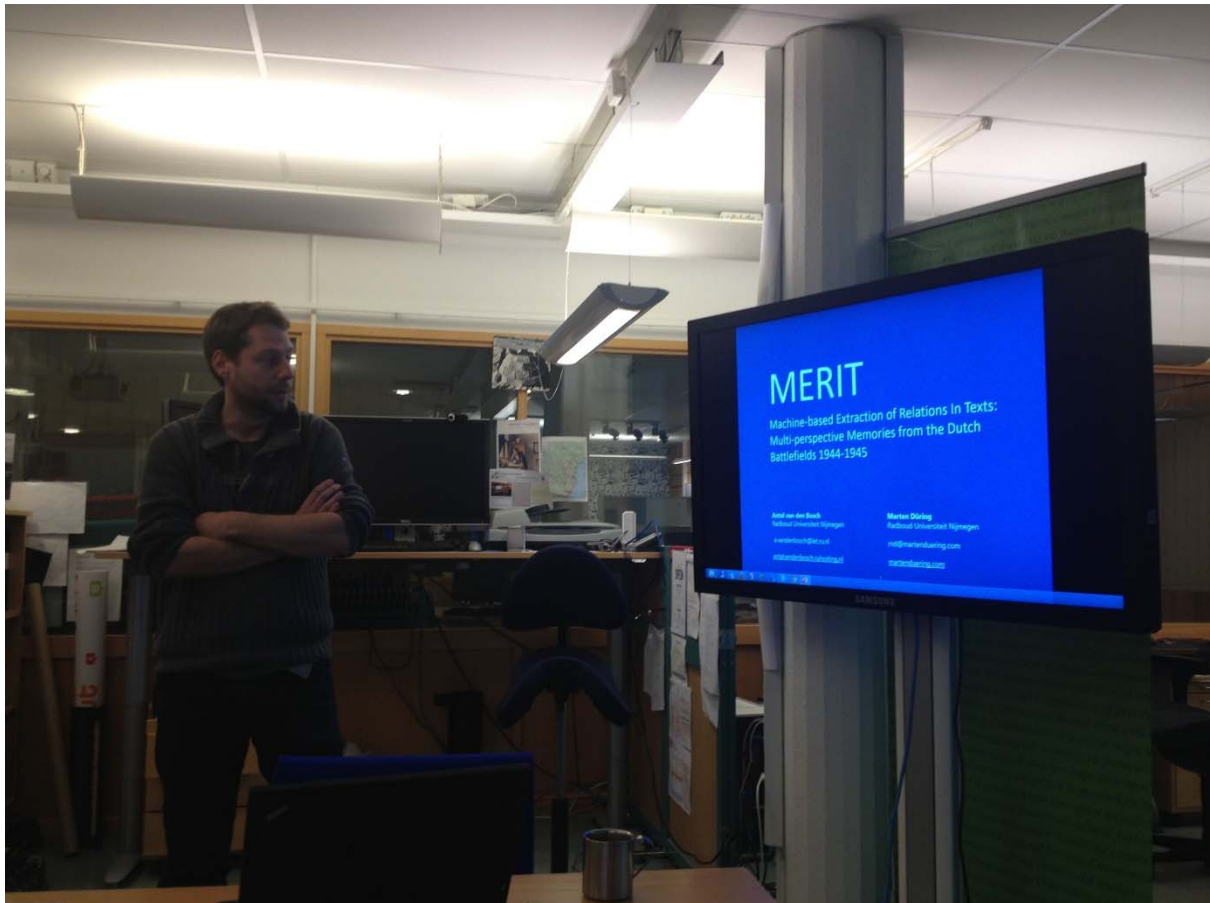
In the discussion there was a question about the impact of these works, from Marten During who asks were there were comments of the articles online? They answered by initiating a discussion about the philosopher who saw what he wanted to see. They also described the collaborative work with a developer and a graphic artist. This way to work with documentation and information design can be seen as is a paradigm shift. The question was raised what is the role of design when you build knowledge.

Orla Murphy suggested reading *The Renaissance Computer, Knowledge technology in the first age of print* (ed by Neil Rhodes and Jonathan Sawday), Routledge 2000.

They made reference to Johanna Drucker where new tools are like Trojan horse see <http://athanasius.stanford.edu/Readings/Drucker.pdf>. They also referenced Matthew Fuller editor, *Software studies*, MIT, 2008. There was additional discussion about the autonomy of method of the researcher – we want to be autonomous, this is very important

Some additional references as mentioned Causality : (Hume, Kant, Quine) "Uncertainty" (fuzzy) (Jacques Bertin) and the role of Interpretation (Quine, Davidson)

Marten During shared a planned project called MERIT and in that presentation looked at the Amicus network and other war applications. He asks how do we aggregate depictions of events based on location, time and type of event. He is interested in terms of practical applications. The work highlights contradictions and ambiguities of sources and their interpretations. Are there recognizable patterns? Who depicts what patterns?



Memories of war and folktales are a good depiction... How are these narratives built? At all times one is working with multi perspectives / views on history

During's methodology:

1. Knowledge map to link information (research)

- Constellations of motifs (research)
- Mapping Public space and historical events
- Research for lay people

2. Visualization and visualization components

- Knowledge map mapping events and witnesses
- What do we know, what do we not know and how do we know it?

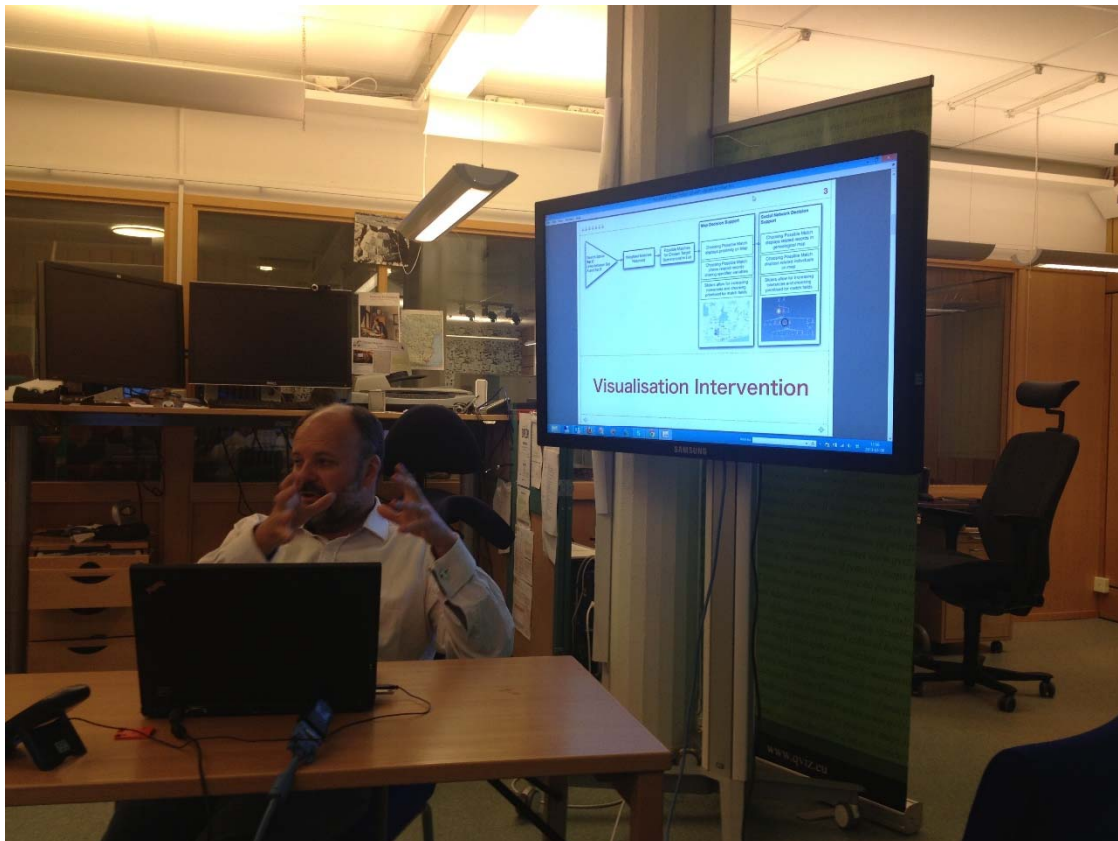
- What does it reveal that we do not know – what is missing?
- In the visualization how can we visualize changing motif constellations over time?

3. Digital Cultural heritage

- The goal is visualize multiperspectivity
- Augmented reality (text photos video location today)
- Public databases for personal queries
- Make a step towards self curation
- Shared and unique exhibitions and how can we build visual scenarios?

In the discussion there were questions about the challenges of finding appropriate symbology to make those links. There was also discussion about the use of standards such as FRBR and FRBR OO with CIDOC CRM

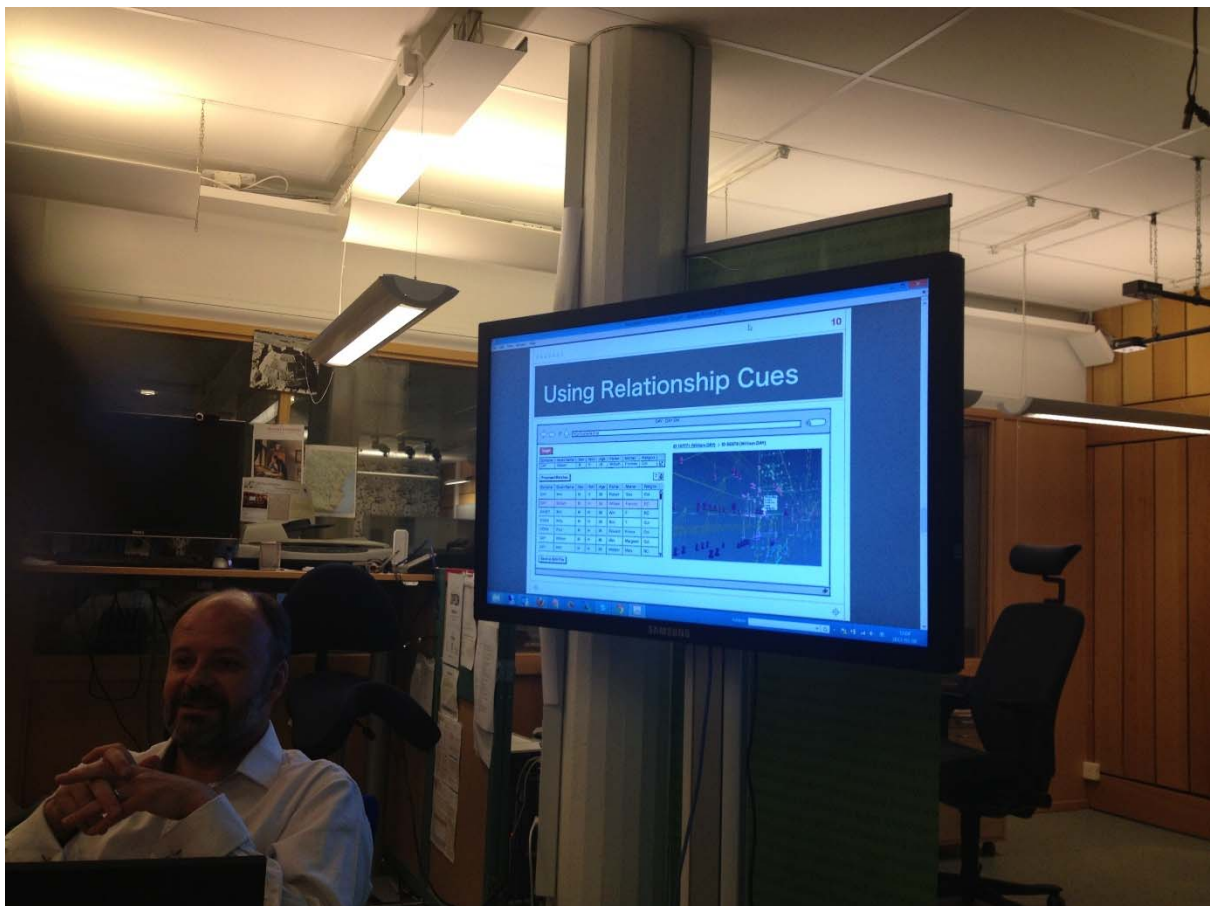
Shawn Day, Royal Irish Academy, Dublin, Ireland presented and demonstrated an innovative application of spatial and social network visualisation as an intervention in large-scale data linkage processes. Shawn argued that human intervention is required in the longitudinal data linkage process in order to render matches with the highest level of certainty, a crucial aspect if the resulting dataset is to support humanities research in particular. Without the application of these visualisation techniques, the process takes much much longer, results in datasets unsuited to many humanities studies, and will not benefit from the additional analytical perspectives that visualisation allows.



These principles and processes are currently being applied as part of a new study exploring epigenetic change in the Irish population resulting from the dietary stress of the Great Famine in the mid-nineteenth century. Through linking of digitised census records from the early twentieth century, to proxy census records from the nineteenth and finally to birth, death and marriage records, new explorations of the impacts of death reporting are being discovered.

In the discussion there were other examples mentioned such as the Chancery Papers and a methodology to recover what was shredded using the data operators' console and visualizing. Matthias asks – how do you visualize complexity? A map is good as a way of educating researchers about how complex the data is.

Mattias shared examples of Church records in Sweden – they begin with the family, but there are issues of spelling. Other participant contributed with comments about the perils of data, of gaps and uncertainty. There was also a good discussion also of the 'what if' standpoint - layering networks on top of each other.



Overall workshop result

The papers covered a variety of topics and methodologies. On the one hand, they gave a panorama of the richness and complexity of the Digital Humanities, and they highlighted some of the common issues and the importance of establishing methodological standards.

One of the main topics we discussed, is how to deal with fuzzy and ambiguous data, especially from a visual point of view. The public, and sometimes even other scholars, tend to assume that there is a simple one to one relationship between information and its representation on a digital map or in a database. Things are seldom that simple, and levels of uncertainty should be clearly perceivable and understandable by the final users of digital tools. As some of the papers specifically pointed out, we need a new shared vocabulary; a kind of visual grammar that will, gradually, become a guideline.

All the papers showed how different digital humanities techniques can be used not only to visualise and communicate the outcome of other disciplines but also to discover new information and ask new questions. Digital tools are not always able to give answers to research questions if used on their own, but they are very effective in identifying gaps, inconsistencies and anomalies, pointing out what needs to be investigated further.

It is quite common that research focuses on multiple interpretations allowed by ambiguous archaeological finds. For this reason, it was useful with the stress put by one of the papers (Visualisation in History) on the scholars interpretative biases due to their own cultural backgrounds. However, the paper on the narratives about World War II (Marten During), made me think more carefully of the political agendas of each country in different time periods; agendas that are very easily detectable after some years, but less visible when the researchers themselves are immersed in it.

Another discussion that was very useful is the one about a user-centred approach. Working mainly for the general public. Digital tools and services that are not used will be dead in few years, in spite of how interesting and stimulating they could have potentially been. From a more practical point of view, underused digital tools will make it more and more difficult for future ones to be funded.

The project about ancient rock carving showed a very effective way to engage a young audience with cultural heritage, trying not only to make the topic as much appealing as possible but also finding a language that makes easier for the user to communicate with the interface and perform rewarding searches.

Moreover, digital tools (such as database, websites, 3D models in Real Time etc...) should interact with the local communities, museums and cultural institutions (as advocated, for example, by the Portable Antiquities Scheme).

A number of key issues emerged from our conversation, all crucial to the participants that might be guidelines or principles for knowledge creation and design:

- The idea of the digital moving beyond what was previously possible, lots of multiplicity evident, multivalency .
- The need to keep in mind personal / plural users ourselves and others... multiple engagements.
- Awareness of persistent themes and decisions what to leave in and leave out in terms of perception and data quality.
- A conviction that engagement with uncertainty was good – how much do you encourage users to engage, recognized their engagement allows them to fill the gaps, not consume a prepackaged story.
- Enthusiasm about the amount of work using linked data
- Recognition that we need to get a handle on the object of study/the domain while trying to define research questions and approaches to the object of study?
- Sensitivity to the delineation of boundaries is important.
- Discussion of motivation and what forces moves us between these defined entities causing these motivations to move, research goals, learn.
- Connectivity how we do model relationships between these defined entities and what kinds of networks of collaboration would be useful?
- Projects should be relevant to the domain that we are studying and to interpretation of the domain
- We need more possibilities to envision uncertainty, to use imagination to combine things together.
- Greater interdisciplinarity (genealogy) would result in a place to reinvent the info and the visualization.
- Secret concept in tools – Johanna Drucker says that new tools are like Trojan horse, bringing their epistemological assumptions with them from their home disciplines.
- The autonomy of method of the researcher is very important and we want to be autonomous.
- Visualising ambiguity and uncertainty (fuzziness) is crucial, as in Gethin's use of cartographic symbology to indicate and make ambiguity transparent.

Reusability of data and methods and generalizing our approaches to it allows us to thinking about and question question the choices one makes. What research questions are being supported by the environment. All were struck by the reusability of Fredrik's faceted browsing environment for Gethin's project and Matthias' and possibly by Shawn's emerging one as well. All participants recognized the importance of documenting the building of visualizations. Shared language around visualization is emerging, such as thinking about Marten's use of symbols to bridge cultural gaps while also introducing our own complexity. In Marten's example of modelling driven by the research question, multiple perspectives must be included rather than being distilled into a single point of view. There is a common language of modelling, (eg of the CIDOC CRM), but as in Valeria's example, it is important to see multiple possible combinations and interpretations.

How can we use interactivity and refine our process through engagement, capturing user interaction for augmentation of a dataset and refine it in the process. Valeria suggested that key aspects of engagement are to involve the user and help them remember, but also negotiate for truth. The idea of public engagement and play was brought up by Valeria and Fredrik as well the question “what can we do to make our visualisations easier to use?”

With regard to uncertainty, it seems useful to build a contrast between the seeming perfection of visualizations while using them to highlight the imperfection - and further the perceived authenticity of text, visualization and numbers. Returning to the theme of fuzziness and ambiguity, we discussed the question of how can we make users aware that data are not perfect and how can we visualize this imperfect data. How can we use visualisation not just as an end, but as tools to challenge narratives and interpretations.



The mandatory coffee break

Participants

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