

European Science Foundation Event Report

Authors: Leif Isaksen, Shawn Day, Mia Ridge and Ryan Shaw

Second NeDiMAH workshop on Space and Time in the Digital Humanities: "Here and There, Then and Now – Modelling Space and Time in the Humanities"

Convenors (NeDiMAH Space and Time Working Group)

Daniel Alves, New University of Lisbon, Portugal

Jens Andresen, University of Aarhus, Denmark

Shawn Day, Royal Irish Academy, Ireland

Øyvind Eide, KCL/University of Oslo, Norway

Eero Hyvönen, Aalto University, Finland

Leif Isaksen, University of Southampton, United Kingdom

Eetu Mäkelä, Aalto University, Finland

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University of Hamburg

Edmund-Siemers-Allee

Hamburg, Germany

Abstract

Spatio-temporal concepts are so ubiquitous that it is easy for us to forget that they are essential to everything we do. All expressions of human culture are related to the dimensions of space and time in the manner of their production and consumption, the nature of their medium and the way in which they express these concepts themselves. Although space and time are closely related, there are significant differences between them which may be exploited when theorizing and researching the Humanities. Among these are the different natures of their dimensionality (three dimensions vs. one), the seemingly static nature of space but enforced 'flow' of time, and the different methods we use to make the communicative leap across spatial and temporal distance. Every medium, whether textual, tactile, illustrative or audible (or some combination of them), exploits space and time differently in order to convey its message. The changes required to express the same concepts in different media (between written and performed music, for example), are often driven by different spatio-temporal requirements. Last of all, the impossibility (and perhaps undesirability) of fully representing a four-dimensional reality (whether real or fictional) mean that authors and artists must decide how to collapse this reality into the spatio-temporal limitations of a chosen medium. The nature of those choices can be as interesting as the expression itself. This workshop allows those working with digital tools and techniques that manage, analyse and exploit spatial and temporal concepts in the Humanities to present a position paper for the purposes of wider discussion and debate.

Scientific Content and Discussions

Presentations

Presentations were separated into two sessions. The first session dealt predominantly with theoretical issues, whereas the second focussed on tools and implementation.

The first session began with Maria Bostenaru Dan discussing ways in which both a sense of place or period can be reinterpreted or 'rediscovered' in artistic media. Of particular interest is the (open) question of whether the phenomenology of space and time can only be recreated in other physical spaces or if digital representations are able to act as effective proxies. In the second paper Kyriaki Papageorgiou examined the impact of ICT on anthropology, particularly the ways in which they have influenced the space and time of work. The discussion followed her personal experiences working in Egypt and using twin metaphors of the labyrinth and the genome she explored the various ways in which the inherent complexity of the way in which space and time must be negotiated means that something of that messiness must be embraced – it should not simply be our goal to straighten things out. Complexity was also central to William Krtezschar and Thomas Bailey's paper on language diffusion. A notoriously difficult phenomenon to trace directly, both due to the multidirectional nature of its flows, and the fact that language is also the potential of speech or writing acts, rather than merely the acts themselves, they have adopted a simulation approach using Agent-Based Modelling, which can then be compared with empirical data. In the final paper of the first session Karl Grossner discussed the intrinsically interwoven nature of places and events and described a data model for representing historical knowledge in what he describes as six Geo-Historical Information Constructs: Events and participation; Place; Historical Process; Groups and membership; Attribution; Historical Periods.

The Second session began with Hara and Sekino's paper discussing two new tools – HuMap and HuTime – that are designed for visualizing historical geographic processes from either a spatial or temporal perspective. The H-GIS research group is currently working on a combined tool and data model so that both sets of functionality will be seamlessly integrated. The second paper described NeatLine, an Omeka-based plugin which allows researchers to combine documentary evidence with sophisticated cartographic tools in order to create interactive exhibits through which users explore geospatial relationships within or between texts and images. In the third paper Kate Byrne discussed the Geographic Annotation Platform, a toolkit developed by the Google Ancient Places Project that will allow researchers to semi-automatically identify place references within a text and map them in a 'narrative timeline' so that the geographic flow of the text can be visualized. In the final paper of the morning Roxana Kath discussed recent work by the eAqua project to map the spread of concepts in antiquity by using Natural Language Processing to surface their occurrence within the corpus of extant ancient Greek works. The ability to visualize such terms easily is leading to fascinating (but harder) questions about the nature of their conceptual development.

Discussion

Discussion was divided into four break-out groups spread along a spectrum from abstract to concrete applications: 1. Theory 2. Methods 3. Infrastructure 4. Tools.

Theory

The "theory" breakout session was well-attended, and as might be expected, raised more questions than it provided answers. The discussion began with participants offering different perspectives on what they understood "theory" to mean and giving examples of theories they found to be productive for thinking about space and time. This led to an exchange of opinions about spatio-temporal tools that "need theorizing." It was noted that there is an often expressed desire to connect digital tool-building with the theoretical discourse of the humanities, but that it is not clear how to do it or what the utility of this will be. Several participants made the point that tool-building has its own theories, expressed in the form of encoding schemes, data structures, and ontologies.

One specific topic that generated productive discussion was the question of how different types of media provide different affordances for representing space and time. There was agreement that there needs to be more work on connecting space and time as represented in texts, audio, and video with the representations being created in GIS systems and other spatiotemporal databases. Texts, sound, and (moving) images are not simply "media" to be spatiotemporally tagged, but may have narrative structures that represent alternative models of space and time.

Questions about narrative and other strategies for representation occupied many of the participants. Uncertainty, ambiguity, and vagueness were identified as specific challenges for representation of space and time in the humanities. There has been a lot of emphasis on ambiguity and vagueness in humanist theorizing, looking at how we nevertheless are able to demarcate boundaries. Our digital tools depend upon our ability to make these demarcations, but can they allow space for the recognition of vagueness, ambiguity, and uncertainty? Systems that do so may require keeping much information that is currently discarded.

Methods

The Methods session was a chance for a group including technologists, historians, social scientists, literature experts and geographers to think through the ways in which tools are instantiations of methods. Disciplines understand and frame 'methods' differently, leading us to ask whether tools designed for non-humanities research and data are suitable for humanities work. If humanists settle for using tools designed for different methods or research questions, how can we help researchers and audiences understand and interpret the implications of choosing one tool over another? A lot of discussion centred on the question of literacy about tools - how do humanists learn when to read a

complex visualisation 'with a grain of salt' and to distinguish the 'truthiness' of something that appears on a screen from the complex process of selecting and tidying sources that underlies it? How can humanists learn to justify and critique tool choice in the same way they justify and critique their selection of sources?

The session considered the implications of this new type of digital literacy for peer reviews of digital work (whether work that explicitly considers impact of digitality on scholarly practice, or work that uses digital content within more traditional academic frameworks).

The group also proposed methods as a bridge between different experts (such as technologists) and humanists. Methods can create a place for common understanding, possibly generated through the process of making or using tools. Finishing on a practical note, the Digital Humanities Commons (<http://dhcommons.org/>) was suggested as a resource for researchers to find suitable collaborators and peer reviewers for digital projects.

Infrastructure

The infrastructure session considered what technical services might be necessary to facilitate the analysis and synthesis of data with a spatio-temporal component. These might be APIs that customisable tools might use or simply human-readable functionality for querying or visualization. Specific requests for research and investment included:

1. Vernacular mapping. Although several web services are now available for dealing with semi-official place names, there is still the inability to recognise slang or informal references, such as the 'Weisswurst Equator' (between North and South Germany) or 'The Big Smoke' (London). These are particularly useful for the Humanities where formal references cannot be expected at all times. Some experiments have been undertaken by mapping aggregate search results from mainstream search providers but they can be heavily influenced by the ranking algorithms used.
2. The problems of dealing with uncertainty continue to plague this topic. Places and periods are vague, socially defined constructs and source data almost always leads to imprecise and/or inaccurate data. Conventions for representing both of these aspects would be helpful, as would the ability to switch rapidly between different visualization techniques so that the 'blind spots' of each aren't ignored.
3. Additional ontology integration was cited as area for investment, especially between gazetteers. Data sources such as Europeana were also flagged up as being increasingly useful as a central spine for cultural heritage concepts.

Tools

This session convened to identify existing challenges and to imagine some innovative new tools. We identified some common lessons and challenges from past experience:

1. Start simple and build - don't try to do too much, too big, too fast – scope out projects and think about incremental evolution and adaptation;
2. Limit scope and find other services to work with - e.g. point to a place name but leave unqualified – stop re-inventing the wheel, and do solid environmental scans;
3. Find a way of encapsulating ambiguity and uncertainty in metadata itself; There is a recurring demand for the all-inclusive digital gazetteer – there are many projects creating their own purpose-focused products, yet everyone is still searching for all seeing, all knowing digital gazetteer;
4. However, this demand is challenged of the recognition that there has been an increasing romanisation of placenames in the digital domain, and although there are emerging gazetteers have sought to alleviate this, the digital domain is privileging machine generated romanised gazetteers which are over represented as authoritative;
5. We need to devise/promote a firm approach to authenticity and authority – a way of embedding a measure in metadata to allow for consumer judgment of what parameters will suit their specific needs and avoid overengineering.

Some innovative directions for future development were identified:

1. Using regular expressions as a simpler means of matching but allowing for sophisticated fuzziness;
2. How can we model for 'vectors of intensity' - impact - thinking about what we really want to do with what time and space tell us;
3. The ability to allow specific references to float both in time an space - collaborative pegging by the practitioner, referencing a fixed identifier that can be adaptively used in a variety of uses where more of less specificity is involved;

There was also a prescient reminder that we would do our area a supreme service by devising approaches that provided a framework for an iterative process allowing us to revisit projects to continue their evolution – especially through the application of new tools to find new knowledge in existing datasets and collections ... how can we engineer approaches to stop stasis?

One of the big questions that emerged from the discussion was the challenge: How do we model for movement, trajectory, fluidity and momentum of events and ideas?

Assessment of Results

The Space and Time Working Group's (STWG) event 'Here and There, Then and Now - Modelling Space and Time in the Humanities' was fruitful and far-reaching. When we decided to run this event in conjunction with Digital Humanities 2012 we could not have anticipated the demand for participation. We were overwhelmed with the response and had to double the number of places we could offer (from 35 to 65). Even after accommodating this demand we were still left with a waiting list and had almost full attendance by those registering.

The format of the day as a combination of delivered papers and then focused discussion led to the compilation of valuable feedback and participants were widely in agreement that the day was a success. Nonetheless we have learned some immediate lessons that we will apply to future events:

The one-day satellite event format was very popular and allowed practitioners to focus on shared issues for a concentrated period of time. We originally had a total of 12 speakers, although a series of unforeseen circumstances meant that no less than four had to drop out at short notice. Nevertheless this allowed us to dedicate more time to the breakout sessions which were considered especially valuable. These allowed for feedback directly to selected speakers and also through careful moderation and well-chosen framing questions derived valuable contributions towards refining the direction of the working group's efforts as we go forward.

As a result of these sessions and the final group session, a number of issues and challenges were identified by participants that we had not previously considered. These are largely indicated in the foregoing discussion, but following additional points were also made:

That the STWG is in a unique position to increase awareness and development of specific APIs that may aid collaborative efforts in the humanities. It can use this intermediary role to stimulate the adoption of standards as well as raise awareness of opportunities to innovate where methodological and infrastructural gaps exist.

The need for greater Open Access within our domain is underappreciated, but advocacy is growing. It is crucial for the further development of our field and warrants a specific workshop, symposium and the wider participation of members of other NeDIMAH work groups.

A recurrent theme throughout the day was the need to find better ways of representing uncertainty and ambiguity. This may reflect a growing confidence within the Digital Humanities as practitioners seek to highlight the limitations, as well as the strengths, afforded by digital methods in order to facilitate more nuanced interpretation. There was a call amongst participants that this particular topic spans many of the NeDIMAH workgroup briefs and may be best addressed through convening a specialist meeting in order 'to be as concrete as possible' about use cases and then disseminating findings to the wider

community of practice.

As we undertake planning for our next session and future activities of the Working Group we realise that one of the areas of greatest value to the domain is to effectively surface lessons learned by participants in past projects. This experience is invaluable to current and future practitioners and involves moving beyond merely the success stories, but candidly evaluating unsuccessful ventures ('Lessons Learned') as well as a means to improving current practice and providing a more solid methodological foundation for future research.

Future Impact on the Field

The NeDIMAH STWG workshops are raising serious questions and observations directly from the coalface of current research. We continue to expand the reach of our own network and are seeing immediate results in the stimulation of new collaborations amongst attending scholars.

The momentum established in our first event in London has grown substantially and led to overwhelming demand to attend this event in Hamburg. This in itself reinforces the need and desire for an open forum to discuss, share and develop collaborative solutions to challenges in the humanities involving temporal and geospatial methods. Through this second symposium we have been able to refine some of the hypotheses established in London in November and have identified future challenges that we will address in our third workshop and as we work with NeDiMAH Methods Ontology Working Group to make recommendations for shared standards and best practices.

The close integration of the STWG event with the Digital Humanities conference in Hamburg demonstrated the fertile and evolving engagement of 'mainstream' digital humanities scholars with these specific areas of interest. Issues raised at our workshop continued to resonate throughout the larger conference, thereby helping to frame wider debates within the Spatial Humanities.

One concrete outcome in terms of the NeDIMAH work programme has been the stimulus to convene a joint conference in conjunction with our Romanian NeDiMAH partners to concretely explore overlap between the Space and Time Working Group and Data Visualisation Working Group. This is scheduled to take place in Bucharest in November.

Annexes

Annex 1: Programme

9:00 - **Session 1: Theory** (Chair: Leif Isaksen)

Maria Bostenaru Dan - 3D conceptual representation of the (mythical) space and time of the past in artistic scenographical and garden installations

Kyriaki Papageorgiou - Time, Space, Cyberspace and Beyond, On Research Methods, Delicate Empiricism, Labyrinths and Egypt

William A. Kretzschmar, Jr. & C. Thomas Bailey - Computer Simulation of Speech in Cultural Interaction as a Complex System

Karl Grossner - Event Objects for Placial History

10:30 - **Break**

11:00 - **Session 2: Tools** (Chair: Shawn Day)

Shoichiro Hara & Tatsuki Skino - Spatiotemporal Tools for Humanities

David McClure - The Canonical vs. The Contextual: Neatline's Approach to Connecting Archives with Spatio-Temporal Interfaces

Kate Byrne - The Geographic Annotation Platform: A New Tool for Linking and Visualizing Places References in the Humanities

Roxana Kath - eAQUA/Mental Maps: Exploring Concept Change in Time and Space

12:30 - **Lunch**

13:30 - **Session 3: Parallel Break out sessions**

A. Theory - Hall H - Chair: Ryan Shaw

B. Methods - Hall K - Chair: Mia Ridge

C. Tools - Hall J - Chair: Shawn Day

D. Infrastructure - Hall C - Chair: Leif Isaksen

15:30 - **Break**

16:00 - **Session 4: Final Discussion** (Chairs: Leif Isaksen/Shawn Day)

17:30 - **Close**

Annex 2: List of Participants

1. Matthias Arnold, "Cluster of Excellence ""Asia and Europe"", Heidelberg University", DE
2. Mehmet Aydin, Akademie der Wissenschaften und der Literatur Mainz, DE
3. Olaf Berg, Max Planck Institute for European Legal History, DE
4. Frank Binder, Justus-Liebig-University Giessen, DE
5. Marcus Bingenheimer, Temple University, US
6. Maria, Bostenaru Dan, "Ion Mincu" University of Architecture and Urbanism", RO
7. Kate Byrne, University of Edinburgh, GB
8. Erik Champion, DIGHUMLAB Digital Humanities Lab Denmark, DK
9. Catherine Coleman, Stanford Humanities Center, US
10. Kimberly Coulter, "Rachel Carson Center for Environment and Society, LMU Munich", DE
11. Barry Coyle, Trinity College Dublin, IE
12. Shawn Day, Digital Humanities Observatory, IE
13. Sebastian Dumm, Helmut-Schmidt-Universität/Universität der Bundeswehr Hamburg, DE
14. Bastian Entrup, Universität Gießen, DE
15. Ursula Flitner, Max Planck Institute for Human Development, DE
16. Philipp Franck, "History Department, University of Heidelberg", DE
17. Stefan Geißler, "History Department, University of Heidelberg", DE
18. Wilko Graf von Hardenberg, Rachel Carson Center, DE
19. Lenore Grenoble, The University of Chicago, US
20. Karl Grossner, Stanford University Libraries, US
21. Shoichiro Hara, Kyoro University, JP
22. Andreas Henrich, University of Bamberg, DE
23. Marianne Huang, "Arts, Aarhus University", DK
24. Jen Jou, Hung, Dharma Drum Buddhist College, TW
25. Leif Isaksen, University of Southampton, GB
26. Ian Johnson, University of Sydney, AU
27. Ihor Junyk, Trent University, CA
28. Frederic Kaplan, EPFL, CH
29. Roxana Kath, Universität Leipzig, DE
30. T. Kelleher, Maryland, US
31. Fabian Körner, Berlin-Brandenburg Academy of Sciences and Humanities, DE
32. William Kretschmar, University of Oulu, FI
33. Christoph Kudella, University College Cork, IE
34. Lukas Loos, "Heidelberg University, GIScience", DE
35. Jens Ludwig, Max-Planck-Institute for the Study of Religious and Ethnic Diversity, DE
36. Richard Marciano, University of North Carolina at Chapel Hill, US
37. Marie-Madeleine Martinet, Université Paris-Sorbonne, FR
38. Silke Matthes, University of Hamburg, DE
39. David McClure, Scholars' Lab, US

40. Michal Boleslav Mechura, "Fiontar, Dublin City University" IE
41. Maud Medves, INRIA, FR
42. Alexander Nakhimovsky, Colgate University, US
43. Anna Neovesky, Akademie der Wissenschaften und der Literatur Mainz, DE
44. Fredrik Palm, UmeÅ University, SE
45. Kyriaki Papageorgiou, N/A,CY
46. Miriam Posner, "University of California, Los Angeles", US
47. Kenneth Price, University of Nebraska-Lincoln, US
48. Gethin Rees, University of Cambridge, GB
49. Ever Reyes, University of Paris 13, FR
50. Mia Ridge Open University, GB
51. Ana Raquel, Riedel von Teschenhausen, University of Leipzig, DE
52. Torsten Roeder, Berlin-Brandenburgische Akademie der Wissenschaften, DE
53. Jentery Sayers, U of Victoria, CA
54. Kilian Peter Schultes, "Heidelberg University, History Departement", DE
55. Daniela Schulz, CCEH/University of Cologne, DE
56. Frithjof Schwartz, Akademie der Wissenschaften und der Literatur Mainz, DE
57. Ryan Shaw, University of North Carolina at Chapel Hill, US
58. Ghislain Sillaume, CVCE, LU
59. John Theibault, Richard Stockton College, US
60. Armin Volkmann, Universität Wuerzburg, DE
61. Jennifer von Schwerin, University of New Mexico, US
62. Claudia Wenzel, Heidelberger Akademie der Wissenschaften, DE
63. Jacqueline, Wernimont, Scripps College, US
64. Christian, Wittern, Kyoto University, JP
65. David Joseph, Wrisley, American University of Beirut, LB

Annex 3: Electronic Resources

Abstracts of the papers presented and summaries of the discussions are available on the NeDiMAH wiki site.

<http://spacetimewg.pbworks.com/w/page/51699274/Second%20Workshop>