

Title: Linking data and disciplines: Exploring narratives through computational tools and interdisciplinary brokering

Authors:

Sabrina Sauer, University of Groningen
Berber Hagedoorn, University of Groningen
Liliana Melgar, University of Amsterdam
Victor de Boer, Vrije Universiteit Amsterdam
Lora Aroyo, Vrije Universiteit Amsterdam
Carlos Martínez Ortiz, Netherlands eScience Center

Abstract:

This paper presents empirical insights from a Digital Humanities case study that investigates the relationship between digital search tools and the research practices of (digital) humanities scholars. These insights emerged during the development of a linked data browser (DIVE+), which aims to support scholars during the exploratory phase of their research by allowing them to create (search) narratives. The main question of the paper is how computational tools, in this case DIVE+, support scholars during this exploratory research phase. We discuss the results from an empirical study that mostly reflect on the role of interdisciplinary collaboration between humanities, computer science and information studies scholars - rather than on the technical challenges encountered - during the application's development. Collaboration takes the shape of a brokering community practice (Wenger, 1998; Henry & Mackenzie, 2012) in which collaborators “[negotiate] their own activities and identities, [while shaping] the relationships between their communities of practice” (Beddoes, 2011: 13). Brokering involves translation, coordination and alignment between perspectives, and complements the creation of boundary objects (here, DIVE+). The second goal of the paper is to relate the case study insights to interdisciplinary concerns about how knowledge is explored, produced and disseminated by means of computational tools and Digital Humanities research practices. This objective relates to prior studies about scholarly research processes (Gradmann et al., 2015 and Bron et al., 2012). It is also particularly valuable to scholars working on the disciplinary boundary of computer science and the humanities, who grapple with issues of how to translate humanities' concepts and concerns into computational terms, which connects to epistemological reflections on how the digital turn affects knowledge production in the humanities.

The presented conclusions originate from the analysis of ethnographic data gathered during the development of the exploratory search browser DIVE+, that is part of the CLARIAH Media Suite (Martínez et al., 2017). DIVE+ is an exploratory, event-centric linked open data browser that connects several large cultural heritage collections (De Boer et al. 2015; 2017). The application supports humanities researchers by allowing serendipitous exploration and visualization of narratives from historical and media events found in cultural heritage collections. Narratives can be visualized in DIVE+ as sequences of search results, connected by scholars in a separate navigation and bookmarking pane in the browser (see Figure 1). Empirical insights are gleaned from the case's user studies that included 124 (digital)

humanities scholars (Hagedoorn & Sauer 2018). The analysis focuses in particular on understanding how DIVE+ supports research and search narrative visualization about media events that are perceived as disruptive; these events are shocking and often unexpected, such as natural disasters or terrorist attacks (Katz & Liebes 2007). Disruptive events are also difficult to narrativize due to their haphazard unfolding, with reporting often taking place across different media platforms simultaneously. Researchers aiming to analyze the representation of disruptive events would thus benefit from tools that offer explorations of perspectives on, as well as visualization of, such events.

The question as to how this search tool affects research practices, and, in line with this how, the digital turn affects knowledge production in the humanities is answered on three levels. Firstly, the paper teases out how DIVE+ affords the exploration and visualization of new narratives about disruptive media events in order to exemplify how knowledge production is affected by *computational tools* that are part and parcel of the digital turn. Secondly, the paper argues that the *collaborations* afforded by the digital turn and within Digital Humanities affect knowledge production in the sense that these collaborations change how knowledge is produced and disseminated; research within Digital Humanities requires active engagement in *brokering* and *translation work* - between collaborating disciplines in terms of concepts and data (Chan, Chenhall, Kohn, Stevens 2017). The DIVE+ case study is a case in point and required the mutual translation of the concept of narrative into computational terms. Third and lastly, on a more overarching level, the paper claims that understanding the stakes of Digital Humanities research requires an integrated perspective characterized by both theoretical interdisciplinary discussions and their empirical, practical application. Integrating theory and tool development is a challenge that forces collaborators to acknowledge what is lost and gained in translation. Acknowledging and articulating the work involved in Digital Humanities research will strengthen both the theoretical and empirical foundation of this discipline.

The user studies show that while (digital) humanities scholars greatly value visualizations of (disruptive) events in narratives, they struggle with contextualizing the linked data presented in DIVE+ as the entities that are presented are taken from different collections - each with its own socio-technical and historical context. Complementing suggested connections between entities with user-generated annotation and narrative creation will benefit scholarly contextualization and research processes as it will allow users to note where entities derive from and what each entity signifies in the overarching research project. The case articulates the important role of critical interdisciplinary dialogue in Digital Humanities research throughout tool development and application; the above user insights culminated in team discussions about the further refinement of the concept of “narrative” in DIVE+. Overall, the paper thus integrates conclusions from a Digital Humanities project with ideas about how Digital Humanities can be understood in terms of bridging and brokering practices. While the visualization of search narratives is central to the case study (see Figure 1), the notion of narrative and narrativizing as a verb are also employed as a metaphor for collaborative interdisciplinary work within Digital Humanities research. The paper illustrates how interdisciplinary research within the Digital Humanities allows the exploration of new

interdisciplinary narratives - how concepts are translated, computed and visualized, what is lost and gained in this translation.

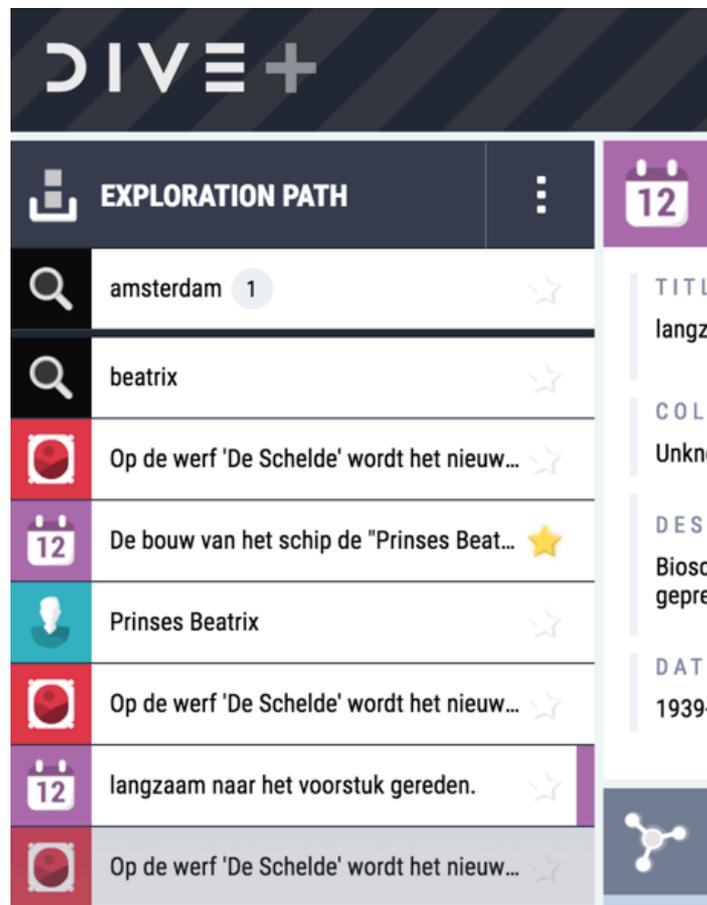


Figure 1: DIVE+ Exploration path. Searching for `beatrix` leads to an event `De bouw van het schip de “Prinses Beatrix”` (construction of the ship `Princess Beatrix`) which is connected to the entity `Prinses Beatrix` after whom the ship was named.

References

Beddoes, K. (2011). *Practices of brokering: Between STS and feminist engineering education research* (Doctoral dissertation, Virginia Tech).

Chan, A., Chenhall, R., Kohn, T., & Stevens, C. (2017). Interdisciplinary Collaboration and Brokerage in the Digital Humanities. *DHQ*, 11(3).

De Boer, V., Oomen, J., Inel, O., Aroyo, L., Van Staveren, E., Helmich, W., & De Beurs, D. (2015). DIVE into the event-based browsing of linked historical media. *Web Semantics: Science, Services and Agents on the World Wide Web*, 35, 152-158.

- De Boer, V., Melgar, L., Inel, O., Martinez-Ortiz, C., Aroyo, L., & Oomen, J. (2017, November). Enriching Media Collections for Event-Based Exploration. In *Research Conference on Metadata and Semantics Research* (pp. 189-201). Springer, Cham.
- Bron, M., Van Gorp, J., Nack, F., de Rijke, M., Vishneuski, A., & de Leeuw, S. (2012, August). A subjunctive exploratory search interface to support media studies researchers. In *Proceedings of the 35th international ACM SIGIR conference on Research and development in information retrieval* (pp. 425-434). ACM.
- Gradmann, S., Hennicke, S., Tschumpel, G., Dill, K., Thoden, K., Pichler, A., & Morbidoni, C. (2015, April). Beyond Infrastructure! Modelling the Scholarly Domain. In *EU funded DM2E* (pp. 1-44). Humboldt-Universität zu Berlin, Philosophische Fakultät I, Institut für Bibliotheks-und Informationswissenschaft.
- Hagedoorn, B. & Sauer, S. (2018). The Researcher as Storyteller: Using Digital Tools for Search and Storytelling with Audio-Visual Materials. *VIEW Journal of European Television History and Culture, Special Issue on Audiovisual Data in Digital Humanities*, eds. Pelle Snickars, Mark Williams and Andreas Fickers, Summer 2018.
- Henry, A. & Mackenzie, S. (2012) Brokering communities of practice: a model of knowledge exchange and academic-practitioner collaboration developed in the context of community policing, *Police Practice and Research*, 13:4, 315-328, DOI: [10.1080/15614263.2012.671598](https://doi.org/10.1080/15614263.2012.671598)
- Katz, E., & Liebes, T. (2007). 'No More Peace!': How Disaster, Terror and War Have Upstaged Media Events. *International Journal of Communication*, 1(1), 10.
- Martínez Ortiz, C., Ordelman, R., Koolen, M., Noordegraaf, J., Melgar Estrada, L., Aroyo, L., ... Poell, T. (2017). From Tools to "Recipes": Building a Media Suite within the Dutch Digital Humanities Infrastructure CLARIAH. Presented at the Digital Humanities Benelux, Utrecht.
- Wenger, E. (1998). *Communities of practice: Learning, meaning, and identity*. Cambridge University Press.