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Digital history and hermeneutics – between theory and practice: An introduction

Introduction

In a 2020 special issue of the journal *Digital Humanities Quarterly*, Urszula Pawlicka-Deger proclaims a “laboratory turn” within the field of digital humanities, representing a paradigm shift in humanities research infrastructure in both Europe and the United States.¹ She locates this turn within discourses of knowledge production in academia and emphasizes a “shift from a laboratory as a physical location to conceptual laboratory.”² This shift, she argues, implies certain values and a new way of thinking and communicating, mirrored in research and training programs. This volume aims to situate itself in the current debate on the so-called laboratory turn of digital humanities by offering experience-based insights into the learnings and failures, intellectual gains and conceptual struggles, and practical challenges and opportunities of a laboratory-like training environment: the Doctoral Training Unit “Digital History and Hermeneutics” (DTU-DHH), affiliated to the Luxembourg Centre for Contemporary and Digital History (C²DH) at the University of Luxembourg.³ The contributions to this volume reflect on the methodological and epistemological challenges and tensions that this DTU faced as a four-year interdisciplinary research program. As a laboratory setting, the DTU created an interdisciplinary home base for researchers from various epistemic cultures and disciplinary traditions. Framed by the concept of digital hermeneutics, the chapters offer a broad portfolio of reflexive approaches to the field of digital history, combining the individual research experiences of PhD students with more general reflections on the validity and heuristic potential of central concepts and methods in the field of digital humanities.

1 Urszula Pawlicka-Deger, “The Laboratory Turn: Exploring Discourses, Landscapes, and Models of Humanities Labs,” *Digital Humanities Quarterly* 14, no. 3 (2020).

2 Pawlicka-Deger, “The Laboratory Turn,” paragraph 2.

3 Financed within the PRIDE scheme of the Luxembourg National Research Fund (FNR) and supported by the University of Luxembourg, the Doctoral Training Unit “Digital History and Hermeneutics” provided an experimental training and research environment for 13 PhD students, their supervisors, and a coordinating postdoctoral researcher. For more information see the project website: <https://dhh.uni.lu>, accessed December 3, 2021.

The Doctoral Training Unit was based on two central concepts: the concept of trading zone and the concept of digital hermeneutics. In order to reflect on the ongoing developments in the field of digital history – which can be seen as a specific area within the broader field of digital humanities – the DTU was conceived as a space of experimentation where different epistemic cultures, disciplinary traditions and communities of practice would mangle and new forms of knowledge in the making would be negotiated.⁴ As the members of the DTU consisted of historians, philosophers, computer scientists, geographers, information scientists, and experts on human-computer interaction, collaborating in this interdisciplinary setting meant interacting in an intellectual climate characterized by experimentation, creative uncertainty, and appropriation of new tools and methodologies for doing digital history research. Framing the DTU in sociological terms as a “trading zone” in which different communities of practice interact, the unit was designed as a collaborative space of knowledge production in which methodological interdisciplinarity and theoretical bricolage formed the mental framework for critical debate and discussion. Inevitably, this asked for serious intellectual and communicative investments by all partners involved, including supervisors and external experts, as well as the doctoral students.

In this sense, the DTU approached digital history as what Julie Thompson Klein refers to as “deep interdisciplinarity”:⁵ a modus of collaboration that can alter disciplinary practices and create new hybrid languages. But how can one constitute and operate such an interdisciplinary trading zone *in practice*? How can one design such a collaborative space within the existing structures of a university environment?⁶ In contrast to similar interdisciplinary setups which generally share a topical or methodological focus, the themes and approaches within the DTU-DHH framework were very broad, reflecting the wide range of research questions and methodological designs of the individual research projects. This diversity of topics and approaches was mirrored by the broad range of sources and data to be studied: these ranged from textual data (corpora of

4 On the concept of “mangle”, see: Andrew Pickering, “The Mangle of Practice: Agency and Emergence in the Sociology of Science,” *American Journal of Sociology* 99, no. 3 (1993): 559–89.

5 Julie Thompson Klein, *Interdisciplining Digital Humanities: Boundary Work in an Emerging Field* (Ann Arbor: University of Michigan Press, 2015), 142.

6 For a discussion of the role of digital humanities centres in the facilitation of interdisciplinary knowledge see: Mila Oiva, “The Chili and Honey of Digital Humanities Research: The Facilitation of the Interdisciplinary Transfer of Knowledge in Digital Humanities Centers,” *Digital Humanities Quarterly* 14, no. 3 (2020). On C²DH’s establishment at the University of Luxembourg see: Max Kemman, *Trading Zones of Digital History* (Oldenbourg: De Gruyter, 2021), 69–81.

nineteenth century psychiatric journals, twentieth century Indigenous Australian autobiographies, transcripts of US presidential television debates), oral testimonies (toponymies, oral interviews), pictures (photographs, early modern *constcamer* paintings), material objects (computers, museum objects), archaeological data (Roman inscriptions, excavations of Stone Age settlements) to computer models (historical networks, agent-based models). All of the resulting datasets were used to test assumptions, to question existing field knowledge, and to develop new layers of interpretative framing. Inspired by the call of Fred Gibbs and Trevor Owens to “publicly experiment with ways of writing about their methodologies, procedures, and experiences with historical data as a kind of text,”⁷ we encouraged our PhD students to reflect on the “usage” of historical data not simply as evidence and “self-identical”⁸ but from multiple viewpoints and based on the principles of digital hermeneutics.

Building a trading zone

The DTU was designed and conceptualized as an interdisciplinary trading zone within the field of digital history.⁹ We define a trading zone as an intellectual space and social place for knowledge transfer and exchange between different knowledge domains and their “communities of practice”: groups of people who collectively engage in shared learning activities and base their group identity on a shared craft, domain and practice.¹⁰ Translated to the field of digital history, the concept seems useful for studying and analyzing how different communities of practice interact and negotiate within an interdisciplinary setting. In *Trading Zones of Digital History*, Max Kemman describes digital history as a trading zone between the “two cultures” of humanities and computational research.¹¹ In this

7 Frederick W. Gibbs and Trevor J. Owens, “Hermeneutics of Data and Historical Writing (Fall 2011 Version),” in *Writing History in the Digital Age*, ed. Jack Dougherty and Kristen Nawrotzki, 2011.

8 Johanna Drucker, “Humanistic Theory and Digital Scholarship,” in *Debates in the Digital Humanities*, ed. Matthew K. Gold (Minneapolis: University of Minnesota Press, 2012), 85–95.

9 See for a detailed reflection on the DTU as interdisciplinary digital history trading zone: Andreas Fickers and Tim van der Heijden, “Inside the Trading Zone: Thinkering in a Digital History Lab,” *Digital Humanities Quarterly* 14, no. 3 (2020).

10 On situated practices in the field of digital humanities, see the special issue “Lab and Slack” of the journal *Digital Humanities Quarterly* vol. 14, no. 3 (2020).

11 Kemman, *Trading Zones of Digital History*, 40. Cf. C.P. Snow, *The Two Cultures and the Scientific Revolution* (Cambridge: Cambridge University Press, 1959).

trading zone, Kemman argues, both historians and computer or data scientists are mutually involved in developing new research questions, designing methodological approaches and experimenting with new research practices. While historians collaborate with computational experts aiming at adjusting digital tools and methods in order to produce new or alternative interpretations of the past, computational experts are driven by a problem-solving approach, testing how computational methods and techniques can help to make sense of heterogeneous, imperfect, and often incomprehensive data collections.¹² As such, the trading zone has proven to be a useful heuristic concept for the analysis of sociocultural interactions, conceptual negotiations, and interactional practices that have emerged during the lifetime of the DTU.

Three aspects of trading zones

Based on our experiences with running the DTU-DHH, three elements of the unit as a trading zone are important to emphasize: (1) locality, (2) interdisciplinarity, and (3) the establishment of a common ground and shared language.¹³ Historian of science Peter Galison defined a trading zone as “an arena in which radically different activities could be *locally*, but not globally, coordinated.”¹⁴ This definition of the trading zone concept emphasizes the role of *locality* and the importance of a collaborative space to facilitate interactions between different communities of practice. In the design of the DTU, the aspect of locality played an important role. Instead of working in different offices and departments, the PhD students were offered one shared office space: the so-called “open space.” Apart from having a shared office space, the group frequently interacted in other localities of the C²DH, most importantly the Digital History Lab where the DTU skills trainings and research seminars took place.

Besides locality, *interdisciplinarity* is a central characteristic of a trading zone: the transfer and exchange of concepts, methods, tools, techniques and skills between or across different disciplinary fields or knowledge domains. Since digital historians have been using research methods and tools from the computer sciences and other knowledge domains such as geographical information systems,

¹² Kemman, *Trading Zones of Digital History*, 3.

¹³ For a more detailed analysis of these three aspects of digital history trading zones, see: Fickers and van der Heijden, “Inside the Trading Zone.”

¹⁴ Peter Galison, “Computer Simulations and the Trading Zone,” in *The Disunity of Science: Boundaries, Contexts, and Power*, ed. Peter Galison and David J. Stump (Stanford, California: Stanford University Press, 1996), 119. Original emphasis.

human-computer interaction, computational linguistics, and network analysis, digital history can be understood as an interdisciplinary field by definition. At the same time, some of the long-standing “epistemic differences”¹⁵ between historians, computer scientists, and other disciplines continue to exist. While computer scientists, for instance, make use of quantitative methods and computational models to produce scientific evidence and to “explain” or “simulate” the world, historians mostly deploy qualitative and hermeneutic methods in trying to “understand” the complexities of past realities.¹⁶ These different scientific traditions – despite the shared use of digital infrastructures, data, and tools – continue to have a strong resonance when it comes to the epistemological and methodological foundations of disciplines and the self-understandings of researchers within those communities of practice. Differences in research design and methodology (quantitative versus qualitative), approach (i.e. machine-based “distant reading” versus individual “close reading” of text corpora), and ambitions (to find general scientific laws versus the production of original subjective interpretations in the humanities) created challenging “boundary objects”¹⁷ in our trading zone.

The aim of the DTU was to overcome such epistemic differences by establishing a *common ground*. As interactional expertise is based on successful communication, a shared vocabulary is a crucial element in all interdisciplinary research. After all, certain terms and concepts can mean different things to different scholars or communities of practice. Whereas historians speak about “sources,” librarians and archivists talk about “documents,” and computer scientists refer to “data.” Such terms and concepts are typical boundary objects, which have to be negotiated in order to enable a shared understanding. Whether such a common vocabulary or language really emerges, however, depends very much on the *type* of trading zone one is interacting with. In their article “Trading Zones and Interactional Expertise,” Collins, Evans and Gorman distinguish between four types of trading zones: inter-language, subversive, enforced, and fractionated.¹⁸

15 Karin Knorr Cetina, *Epistemic Cultures: How the Sciences Make Knowledge* (Cambridge, Mass.: Harvard University Press, 1999).

16 Andreas Fickers, “Veins Filled with the Diluted Sap of Rationality: A Critical Reply to Rens Bod,” *BMGN – Low Countries Historical Review* 128, no. 4 (2013).

17 Susan Leigh Star and James R. Griesemer, “Institutional Ecology, ‘Translations’ and Boundary Objects: Amateurs and Professionals in Berkeley’s Museum of Vertebrate Zoology, 1907–39,” *Social Studies of Science* 19, no. 3 (1989): 387–420; Pascale Trompette and Dominique Vinck, “Revisiting the notion of Boundary Object,” *Revue d’anthropologie des connaissances* 3, no. 1 (2009): 3–25.

18 Harry Collins, Robert Evans, and Mike Gorman, “Trading Zones and Interactional Expertise,” *Studies in History and Philosophy of Science Part A* 38, no. 4 (December 2007): 657–66.

According to the sociologists of knowledge, the type of trading zone depends on whether a group is homogeneous or heterogeneous, and whether the “trading” or group dynamics are based on collaboration or coercion. They argue that “inter-language trading zones” may only develop in groups with strong collaboration and high homogeneity – as opposed to enforced trading zones, which are characterized by high heterogeneity and high coercion. The DTU has been characterized by such high heterogeneity since the beginning of the project, given the groups’ diverse mix of disciplinary backgrounds, ages, and nationalities. Being familiar with the work of Julie Thompson Klein, we were cautioned that, although the heterogeneity of our DTU could potentially generate highly innovative outputs, it could also turn into a source of conflict.¹⁹ By means of the so-called “digital humanities incubation phase,” we aimed to establish a common ground and shared language in order to stimulate interdisciplinary exchanges and collaborations within the project team, and so to transform the DTU into an *inter-language* trading zone in digital history.

Digital hermeneutics as critical framework and research agenda

While the concept of a trading zone is helpful in gaining a better insight into the complexity of interdisciplinary research practices, with their multi-layered challenges, on a theoretical as well as a practical level, the DTU aimed at making these challenges explicit – and objects of critical reflection by all participants. Nowadays, all stages of realizing a digital history project are to a lesser or greater degree shaped by the use of digital infrastructures and tools. Be it browsing on the Internet, taking notes of an interview on a laptop, capturing digital photographs in archives or museum collections, recording an oral testimony on a mobile phone, or organizing crowdsourcing activities on the Web, the workflow of historical research is characterized by digital interventions.²⁰ We use “digital hermeneutics” as a concept that enables historians to critically reflect on the various interventions of digital research infrastructures, tools,

¹⁹ Klein, *Interdisciplining Digital Humanities*, 138.

²⁰ On the notion of “digital intervention” in doing public history, see: Anita Lucchesi, “For a New Hermeneutics of Practice in Digital Public History: Thinkering with memorecord.uni.lu” (PhD dissertation, University of Luxembourg, 2020).

databases, and dissemination platforms in the process of thinking, doing and narrating history.²¹

Although one can argue that all historians have by now become digital,²² one has to emphasize the fact that many remain strongly embedded in analog practices and traditions. This current duality or parallelism of analog and digital practices forces historians to experiment with the new while keeping established norms of valid historical practices alive. If we accept that “hybridity is the new normal,”²³ we need an update of historical hermeneutics problematizing the “in-betweenness” of current history practices.²⁴ Instead of falling into the trap of asymmetric conceptions (“analog” versus “digital”), the concept of digital hermeneutics proposes a critical framework for making the methodological and epistemological tensions in current history practices explicit.²⁵ Making the “interventions” of the digital into historical practices explicit first of all asks for a critical engagement with digital infrastructures, data, and tools – a hands-on approach that combines playful tinkering with critical thinking. This idea of “thinkering” as a heuristic mode of doing has informed both the individual work of PhD students and the organization of collective skills training and hands-on research seminars within the DTU. As the many reflexive blog entries under the “thinkering” label on the C²DH website²⁶ and DTU website²⁷ demonstrate, the

21 On the idea of digital hermeneutics see: Manfred Thaller, “The Need for a Theory of Historical Computing,” *Historical Social Research/Historische Sozialforschung*, no. 29 (1991): 193–202; Joris J. van Zundert, “Screwmenetics and Hermenumericals: The Computationality of Hermeneutics,” in *A New Companion to Digital Humanities*, ed. Susan Schreibman, Ray Siemens, and John Unsworth (London: Wiley-Blackwell, 2016), 331–47; Stephen Ramsay, “The Hermeneutics of Screwing Around; or What You Do with a Million Books,” in *Pastplay: Teaching and Learning History with Technology*, ed. Kevin Kee (Ann Arbor: University of Michigan Press, 2014), 111–20. From a philosophical perspective, see: Alberto Romele, *Digital Hermeneutics: Philosophical Investigations in New Media and Technologies* (New York: Routledge, 2020).

22 See: Daniel J. Cohen and Roy Rosenzweig, *Digital History: A Guide to Gathering, Preserving, and Presenting the Past on the Web* (Philadelphia: University of Pennsylvania Press, 2006).

23 Gerben Zaagsma, “On Digital History,” *BMGN – Low Countries Historical Review* 128, no. 4 (December 16, 2013): 3–29.

24 Andreas Fickers, “Update für die Hermeneutik. Geschichtswissenschaft auf dem Weg zur digitalen Forensik?,” *Zeithistorische Forschungen/Studies in Contemporary History* 17, no. 1 (2020): 157–68.

25 Reinhart Koselleck, “Zur historisch-politischen Semantik asymmetrischer Gegenbegriffe,” in *Vergangene Zukunft: zur Semantik geschichtlicher Zeiten* (Frankfurt a.M.: Suhrkamp, 1989), 211–59.

26 Luxembourg Centre for Contemporary and Digital History, <https://c2dh.uni.lu/thinkering>, accessed December 3, 2021.

27 Doctoral Training Unit “Digital History and Hermeneutics”, <https://dhh.uni.lu/category/blog/>, accessed December 3, 2021.

concept of digital hermeneutics has been instrumental in critically reflecting on how digital tools and infrastructures are transforming historical research practices in all stages of the iterative research process. As a comprehensive framework of epistemological and methodological investigation, it invites us to approach the historical research practices of search, data management and curation, analysis and visualization, interpretation and publication, by:

- opening the black boxes of algorithm-driven search engines and reflecting on the heuristics of search in online catalogs and repositories²⁸
- thinking about the six Vs of data integrity (volume, velocity, variety, validity, veracity, value) and training us in historical data criticism²⁹
- understanding and critically reflecting on how digital tools co-create the epistemic objects of study and turn the user into a manipulator of highly specific research instruments³⁰
- deconstructing the “look of certainty” of data visualization by exploring the indexical relationship between the “back end” and “front end” of dynamic interfaces³¹
- developing multimodal literacy in order to decode narrative conventions of transmedia storytelling and the relational logic of web-applications and archives when interpreting and publishing historical data.³²

28 David Gugerli, *Suchmaschinen: die Welt als Datenbank* (Frankfurt a.M.: Suhrkamp, 2009); Ronald E. Day, *Indexing It All: The Subject in the Age of Documentation, Information, and Data* (Cambridge, Mass.: MIT Press, 2014); Jessica Hurley, “Aesthetics and the Infrastructural Turn in the Digital Humanities,” *American Literature* 88, no. 3 (September 2016): 627–37.

29 Carl Lagoze, “Big Data, Data Integrity, and the Fracturing of the Control Zone,” *Big Data & Society* 1, no. 2 (July 10, 2014): 1–11; Bruno J. Strasser and Paul N. Edwards, “Big Data Is the Answer . . . But What Is the Question?,” *Osiris* 32, no. 1 (2017): 328–45.

30 Marijn Koolen, Jasmijn van Gorp, and Jacco van Ossenbruggen, “Toward a Model for Digital Tool Criticism: Reflection as Integrative Practice,” *Digital Scholarship in the Humanities* 34, no. 2 (June 1, 2019): 368–85; Karin van Es, Maranke Wieringa, and Mirko Tobias Schäfer, “Tool Criticism and the Computational Turn: A ‘Methodological Moment’ in Media and Communication Studies,” *M&K Medien & Kommunikationswissenschaft* 69, no. 1 (2021): 46–64.

31 Johanna Drucker, “Performative Materiality and Theoretical Approaches to Interface,” *Digital Humanities Quarterly* 7, no. 1 (2013); David M. Berry, *Critical Theory and the Digital* (New York: Bloomsbury, 2014); Alexander R. Galloway, *The Interface Effect* (London: Polity, 2012); Johanna Drucker, *Visualization and Interpretation: Humanistic Approaches to Display* (Cambridge, Mass.: MIT Press, 2020).

32 Steve F. Anderson, *Technologies of History: Visual Media and the Eccentricity of the Past*, Interfaces, Studies in Visual Culture (Hanover, NH: Dartmouth College Press, 2011); Niels Brügger, *The Archived Web: Doing History in the Digital Age* (Cambridge, Mass.: MIT Press, 2018); Tracey Bowen and Carl Whithaus, eds., *Multimodal Literacies and Emerging Genres* (Pittsburgh, Pennsylvania: University of Pittsburgh Press, 2013).

As mentioned earlier, the original idea of the DTU was to reflect on the multiple interferences of digital infrastructures and tools on the “classical” research flow of historical research – encompassing the search for sources, the data management and curation, the analysis and visualization, and finally the hermeneutic interpretation and storytelling. For this, we argued, new critical skills are necessary: algorithm criticism, digital source criticism, tool criticism, interface criticism, and simulation criticism. All these digital skills and competences should be part of the toolkit of digital historians, symbolizing the “reflexive turn” in digital humanities.³³

Whereas the plasticity of the linear structure of a research process comprising clearly defined steps³⁴ provided a good starting point to engage the interdisciplinary group with the concept of digital hermeneutics and to critically reflect on this process in practice, it soon became apparent that all stages were in fact fluent, interconnected, and often conducted in parallel (Fig. 1). Following Stephen Ramsay and Joris van Zundert one could stress that “the screwing around with data”³⁵ to test tools and methods during the research process implies that “our methodologies might not be as deliberate or as linear as they have been in the past.”³⁶ Depending on how the research question is approached and modified over time, new searches for data have to be made, new tools to be tested, datasets to be adapted and modified, and visualizations or interpretations to be revised and refined.

To summarize, digital hermeneutics as a “hermeneutics of in-betweenness”³⁷ problematizes the many tensions between the analog and the digital, browsing and searching, scanning and reading, sharing and engaging, and accessibility

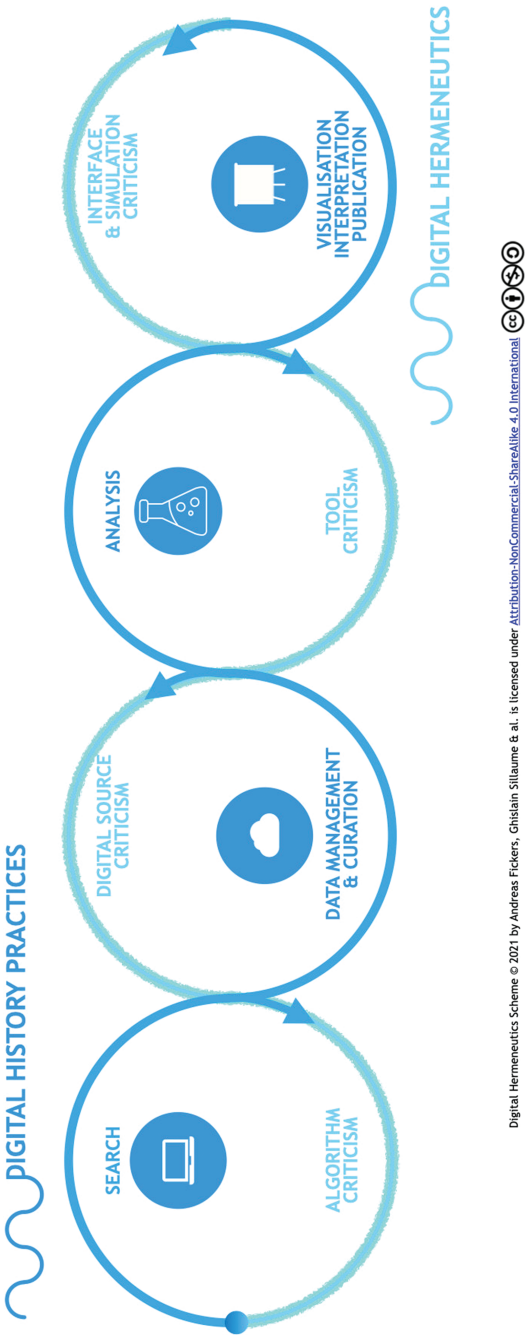
33 Petri Paju, Mila Ova, and Mats Fridlund, “Digital and Distant Histories. Emergent Approaches within the New Digital History,” in *Digital Histories: Emergent Approaches within the New Digital History*, ed. Mats Fridlund, Mila Oiva, and Petri Paju (Helsinki: HUP – Helsinki University Press, 2020), 3–18, here p. 5; Mareike König, “Die digitale Transformation als reflexiver turn: Einführende Literatur zur digitalen Geschichte im Überblick,” *Neue Politische Literatur* 66, no. 1 (March 2021): 37–60.

34 See the graphical research and training design 2019 underlying the programme, published 2020 in: Fickers, “Update für die Hermeneutik”.

35 van Zundert, “Screwmenetics and Hermenumericals”; Ramsay, “The Hermeneutics of Screwing Around”.

36 Gibbs and Owens, “Hermeneutics of Data and Historical Writing (Fall 2011 Version).”

37 Andreas Fickers, “Hermeneutics of In-Betweenness: Digital Public History as Hybrid Practice,” in *Handbook of Digital Public History*, ed. Serge Noiret, Mark Tebeau, and Gerben Zaagsma (Oldenbourg: De Gruyter, forthcoming).



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Fig. 1: Ideal-typical scheme of the research process, demonstrating the concept of digital hermeneutics as a combination of digital literacy (skills) and critical reflection. © Andreas Fickers and Ghislain Sillaume et al., 2021. Attribution-NonCommercial_ShareAlike 4.0 International.

and interpretation that are inscribed into current practices of digital history.³⁸ Applied digital hermeneutics is as much a “theory of practice” as a “practice of theory”.³⁹ by exploring the intellectual space in between the “unknown” and the “familiar,” digital hermeneutics occupies exactly the space that the philosopher of knowledge Hans-Georg Gadamer had identified as the “locus” of hermeneutics – that is, its in-betweenness.⁴⁰

Turning theory into practice

It is by undertaking heads-on and hands-on experiences that both students and supervisors can “grasp” the methodological and epistemological challenges inscribed into the practices of digital hermeneutics. The training concept of the DTU-DHH therefore followed the pedagogical principle of learning by doing.⁴¹ At the core of this approach were the nine skills trainings offered during the project’s DH incubation phase. These trainings introduced the PhD students to the following topics: text mining; digital source criticism; database structures; introduction to programming with Python; data visualization; tool criticism; algorithmic critique; GIS analysis, mapping and cartography; and experimental media ethnography.

In retrospect, one can argue that the skills trainings at least partially succeeded in establishing a common ground for all DTU participants, by creating a shared set of practical knowledge originating from different disciplinary traditions. This stimulated a transfer of knowledge and skills across the participants involved and contributed to a better understanding of how students who had trained in different epistemic communities were able, or not, to appropriate research concepts, methods, and tools from other disciplines. The training furthermore encouraged the PhD students to critically reflect on the use of digital methods and tools in their own research projects. By means of lectures and

38 On the notion of inscription and the role of the digital infrastructures, objects, and tools as “actants,” see: Bruno Latour, *Reassembling the Social: An Introduction to Actor-Network-Theory* (Oxford, New York: Oxford University Press, 2005).

39 Theodore R. Schatzki, Karin Knorr Cetina, and Eike von Savigny, eds., *The Practice Turn in Contemporary Theory* (London, New York: Routledge, 2001).

40 Hans-Georg Gadamer, *Wahrheit und Methode: Grundzüge einer philosophischen Hermeneutik* (Tübingen: Mohr Siebeck, 2010[1960]), 300.

41 Jean Lave and Etienne Wenger, *Situated Learning: Legitimate Peripheral Participation* (Cambridge, UK: Cambridge University Press, 1991); Peter Heering and Roland Wittje, eds., *Learning by Doing: Experiments and Instruments in the History of Science Teaching* (Stuttgart: Franz Steiner Verlag, 2011).

hands-on exercises, for instance, they learned and experienced how digital tools (e.g. Voyant, QGIS, and Tableau) could be useful heuristic instruments for text analysis and data visualization, in general terms. But they simultaneously reflected on how these tools could potentially shape their own research practices and interpretative frameworks. Yet the DH incubation phase did not serve everyone equally. Since the skills trainings came with a significant time investment, the question of whether or not they should be compulsory or not was extensively debated within the project team. Eventually, halfway through the project's first year, we decided to no longer make the training compulsory. Once the courses became optional, the PhD students could choose which to follow, based on an assessment of the relevance to their individual research projects.

In the second and third years of the DTU, training formats were adapted to the specific needs of each researcher. The PhD students were encouraged to organize workshops discussing specific aspects of their research projects or fields. In addition, a lecture series hosting international guest speakers was organized.⁴² These formats were designed to be initiated by the PhD researchers themselves, offering opportunities to meet individual training needs and broadening their academic networks. At the same time, these activities provided a framework for fostering the constant exchange between DTU members and an academic public interested in joining the lectures or workshops. An international masterclass involving the scientific partner institutions of the DTU generated constructive feedback for the PhD students in their third year and initiated synergetic discussions within the program.⁴³

Unsurprisingly, establishing the DTU as a collaborative working environment also faced several challenges. One structural problem was that all the PhD students had a double affiliation. As members of the DTU, they were affiliated to the C²DH as hosting institution, which offered them both the “open space” and the Digital History Lab as collaborative work spaces. In addition, the individual PhD students were affiliated to the faculty or department of their respective supervisors, where they were partly embedded into ongoing research and the teaching activities of their supervisors. This dual affiliation created a potential conflict of interest between the “DTU logic” and the “department logic.” The various disciplinary embeddings of the supervisors involved in the unit created some tensions in terms of expectations and responsibilities, which had to be mediated by the DTU management team. Some supervisors offered their PhD

⁴² Doctoral Training Unit “Digital History and Hermeneutics”, <https://dhh.uni.lu/category/activities/lecture-series/>, accessed December 3, 2021.

⁴³ Doctoral Training Unit “Digital History and Hermeneutics”, <https://dhh.uni.lu/event/international-master-class-digital-history-and-hermeneutics/>, accessed December 3, 2021.

students a second office in their departments, thereby creating a physical distance between these students and the rest of the group working in the C²DH open space. In our view, this constituted a crucial limitation to the trading zone concept as it fostered an atmosphere of individual rather than collective working environments. It took considerable effort in terms of project management and leadership to redirect this tendency and refocus the DTU on gaining common achievements.

The coordinating postdoctoral researcher played a crucial role in mediating institutional tensions, aligning the team members in terms of expectation management, and in organizing regular team meetings and team-building activities, as well as in guaranteeing a constant flow of information.⁴⁴ Of importance for the governance of the unit was the creation of a management team consisting of the head of the DTU, two supervisor professors, the coordinating postdoctoral researcher, and one representative of the doctoral students (the latter being elected by the PhD students and having a non-renewable term of one year). Following Anna Maria Neubert, navigating these interdisciplinary differences, including in terms of desirable outcomes and expected results, requires the use of professional project management tools and techniques, as well as continuous investment in communication – both face-to-face and through digital means.⁴⁵

Being aware of the key importance of close proximity and random encounters for creativity and team-building, the coronavirus pandemic of 2020–2021 came as an unpleasant surprise to the project, forcing the team into a remote-working mode during the successive shutdowns. Luckily, the crisis hit the DTU in the final phase of the project, when most PhD students were focusing on writing their PhD dissertations and preparing their defenses. Although planned on-site workshops and lectures had to be canceled and new initiatives became nearly impossible, the team continued to discuss the progress of research projects online and shared their experiences and the new challenges of work-life balance using online communication channels, such as Slack. With communication moving entirely to online formats, the importance of physical co-location as a crucial element for interdisciplinary collaboration became obvious to all in a rather abrupt and unexpected way. Whereas the writing up of individual research results was possible in remote working mode – although not without problems, due to a lack of access to libraries and archives – it became increasingly arduous

⁴⁴ Klein, *Interdisciplining Digital Humanities*, 138.

⁴⁵ Anna Maria Neubert, “Navigating Disciplinary Differences in (Digital) Research Projects Through Project Management,” in *Digital Methods in the Humanities: Challenges, Ideas, Perspectives*, ed. Silke Schwandt (Bielefeld: Bielefeld University Press, 2020), 59–85.

to keep the team spirit alive, something we had previously tried to actively promote through team retreats and excursions.

Organization of this book

This volume does not aim to offer a synthesis of the multilayered research activities that have characterized the interdisciplinary setting of the DTU. Neither does it argue that there are “best practices” for how to organize such collaborative settings for doctoral training. While using the concept of digital hermeneutics as both an epistemological and a methodological framework for the project, we embrace the “interpretative flexibility” of the different disciplinary appropriations of the concept that we see in the individual research projects. When looking at the thirteen contributions by the PhD students to this volume, we observe a great variety of ways in which the concept of digital hermeneutics has shaped individual research practices and how it has affected the interpretation of research results. While some PhD theses engage with the concept in a deeper theoretical or epistemological manner, others demonstrate a more pragmatic translation of methods and tools between disciplinary domains and traditions. As all PhD theses in the DTU were designed by the PhD students and their supervisors as individual research projects, they have to be seen as independent projects – but nevertheless they also aim to speak to the larger research agenda of the DTU as a whole. For the purposes of this book though, all PhD students were asked to reflect more systematically on how the interdisciplinary setting of the DTU, with its many skills training and collaborative activities, had an impact on their individual PhD research projects. In addition, we encouraged the authors to think about the added value of the concept of digital hermeneutics as a heuristic tool, or interpretative framework, for their research. The book is therefore a continuation of the original effort by all DTU members to share experiences, to document struggles and failures, and to promote a self-reflexive approach to doing digital humanities and history research. These auto-ethnographic practices are intended to contribute to the growing interest in the pragmatics of digital hermeneutics and praxeological studies in the field of history and humanities.⁴⁶

⁴⁶ See: Lucchesi, “For a New Hermeneutics of Practice in Digital Public History”; Herman Paul, “Performing History: How Historical Scholarship Is Shaped by Epistemic Virtues,” *History and Theory* 50, no. 1 (2011): 1–19; Tracie L. Wilson, “Coming to Terms with History: Translating and Negotiating the Ethnographic Self,” *H-Soz-Kult*, June 14, 2012.

In the first section of this book, entitled “Hermeneutics of machine interpretation,” we present five case studies originating from the fields of computational linguists, computer science, digital archaeology, and philosophy. The common thread of these chapters is that they aim to disclose the added heuristic and pragmatic value of computer sciences methods and tools for humanities research: from historical network analysis in large-scale professional networks (Antonio Fiscarelli) to agent-based modeling in Stone Age settlement patterns (Kaarel Sikk), from natural language processing and argument-mining in political debates (Shohreh Haddadan) to word embeddings in literary studies and autobiographical writings (Ekaterina Kamlovskaya) and text mining and topic modeling in philosophical texts (Thomas Durlacher).

The second section, headed “From ‘source’ to ‘data’ and back,” thematizes the many challenges historians face when modeling content for historical research by transforming complex, inconsistent, fragmented historical “sources” into structured data or unstructured datasets.⁴⁷ The case studies collected here were originally intended to focus on a single step or phase in the research process, such as data search, curation, analysis, or visualization. But all the chapters in fact emphasize the non-linear and highly iterative nature of the hermeneutic exercise characterizing any research process: from “continuous searching” as gradual refinement of the research question (Eva Andersen) to the ephemeral nature of “living sources” such as place names (Sam Mersch), from fragmented datasets about Roman trade networks (Jan Lotz) to the “translation” of Renaissance paintings into a relational database (Floor Koeleman) and the problem of source abundance and digital asset management systems (Sytze Van Herck).

The final section of the volume, called “Digital experiences and imaginations of the past,” problematizes the impact of digital tools and infrastructures in interacting with the past and simulating new environments that shape our historical imagination. Historical research is increasingly challenged to reflect on new forms and formats of storytelling and engaging with the broader public – be it in schools, museums, or video games. In this section, we look at the pedagogical value of a 3D model of a medieval castle (Marleen de Kramer), the learning experience of creating a mobile app walking tour on Jewish history (Jakub Broniec), and the importance of a user-centric design within digital museum contexts (Christopher Morse).

⁴⁷ Compare the experiences of humanist researchers of the SFB 1288 “Practices of Comparing: Ordering and Changing the World” at the Bielefeld University: <https://www.uni-bielefeld.de/en/sfb1288>, accessed December 3, 2021. Cited in Silke Schwandt, ed., *Digital Methods in the Humanities: Challenges, Ideas, Perspectives* (Bielefeld: Bielefeld University Press, 2020).

We hope that this volume offers interesting insights into the laboratory of digital history as an interdisciplinary endeavor. We would like to thank all 13 PhD students for their willingness to share their thoughts and reflections, or, in other words, to allow us to have a view into their “digital kitchen”: turning the “raw” into the “cooked” is a process asking for creativity and rigorousness, conceptual thinking and hands-on experiences, and – in the specific case of this Doctoral Training Unit – both team-playing spirit and individual initiative.⁴⁸ The book is a thoughtful documentation of that “thinkering” process, aimed at both educating and encouraging other scholars in the rich trading zone of digital humanities. As Patrick Svensson stated in 2012: “The digital humanities can be seen as a twenty-first-century humanities project driven by frustration, dissatisfaction, epistemic tension, everyday practice, technological vision, disciplinary challenges, institutional traction, hope, ideals and strong visions.”⁴⁹ It was in exactly this spirit that the Doctoral Training Unit “Digital History and Hermeneutics” was driven and experienced. It was, we believe, a worthwhile journey.

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⁴⁸ Michael Frisch, “From ‘A Shared Authority’ to the Digital Kitchen, and Back,” in *Letting Go?: Sharing Historical Authority in a User-Generated World*, ed. Bill Adair, Benjamin Filene, and Laura Koloski (Philadelphia: Pew Center for Arts and Heritage, 2011), 126–37.

⁴⁹ Patrik Svensson, “The Digital Humanities as a Humanities Project,” *Arts and Humanities in Higher Education* 11, no. 1–2 (2012): 42.

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