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MIXING
METHODS

PRACTICAL INSIGHTS FROM
THE HUMANITIES IN THE DIGITAL AGE

From:

Birgit Schneider, Beate Löffler, Tino Mager, Carola Hein (eds.)
Mixing Methods
Practical Insights from the Humanities in the Digital Age

The digital transformation is accompanied by two simultaneous processes: digital humanities challenging the humanities, their theories, methodologies and disciplinary identities, and pushing computer science to get involved in new fields. But how can qualitative and quantitative methods be usefully combined in one research project? What are the theoretical and methodological principles across all disciplinary digital approaches? This volume focusses on driving innovation and conceptualising the humanities in the 21st century. Building on the results of 10 research projects, it serves as a useful tool for designing cutting-edge research that goes beyond conventional strategies.

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Mixing Methods. Practical Insights from the Humanities in the Digital Age

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Digitality is a cause and a consequence of different data cultures. It applies to the 10 research projects that are included in this volume. They are rooted in various humanities disciplines such as art history, philosophy, musicology, religious studies, architectural history, media studies, and literature studies. As diverse as the disciplines are the objects and their formats, which are the subject of this book. The cultural data of the projects include recordings of music and spoken word, photographs and other types of images, handwriting, typoscripts and maps. The oldest material dates back to 500 BCE, followed by medieval times, the 18th and 19th centuries, early 20th century and the present. All projects share that they study their material with digital methods, although digitality comes into play at different moments and layers in each of the projects. Hardly readable manuscripts from the 18th century have to be treated with specialized OCR-methods while Plato's texts are already available in digital form, and therefore open up other affordances for analysis. Special analysis possibilities had to be developed for certain image sources. For all projects, however, it is equally true that only the digitization of the objects makes them accessible to the methods that are the subject of this book.

If digitized cultural objects enable new research approaches, the question arises as to what benefit is actually produced when these objects are available in digital form. The additional value lies not only in the accessibility of data, but also in the questions that the digitized material allows us to ask, or which old questions can be answered in new ways on the basis of the digitized material. This means, digital cultural materials analysed by digital methods change the epistemological approaches of the humanities by opening up to research cultures formerly not used in the humanities. Not only are scientific methods relevant to the humanities, but the humanities themselves and their way to address the world are also relevant to science.

Much ink (or pixel) has already been spent defining what digital humanities are and are not.[1] We do not add to this but refer to philosopher Sybille Krämer's four aspects of digital humanities practice here. She writes that digital humanities projects involve "(1) The dataization of research subjects; (2) the use of either 'data-based' or 'data-guided' algorithmic research techniques; (3) the visualization of the results of analysis in a form that can be received by humans; (4) the novelty value of the findings."[2] As such the editors of this volume understand digital humanities as a highly explorative field, which tentatively researches what we can learn from digitization beyond the analogue and digital sources collected in databases and library catalogues and beyond the research we are already conducting in the humanities. It probes if we can fill research gaps with these new approaches or ask questions we have not asked until now. It is not about the humanities converting their data into digital logic, nor is it about computer science aligning its practices entirely with the concerns of the humanities. Instead, it is about finding a common ground. At the same time digital humanities, as we understand them, are calling for a general increase in digital literacy as a cultural technique in the humanities while not declaring interpretations as absolute. Against this backdrop, the digital transformation that is mirrored by the digital humanities is not a threat to the traditional theories, methodologies and disciplinary identities of the humanities. Rather it is asking humanities and computer science to get involved in new fields at eye level. However, we must admit that in practice, the two approaches very often stay unrelated or sometimes are even juxtaposed. The projects in this book start at this point of rupture by also reflecting self-critically on the question: what happens if both approaches are combined in one and the same research project by using a 'mixed methods' approach?

This question was the starting point for 10 research projects funded by the Volkswagen Foundation in the period of 2015–2020 with the funding line *Mixed Methods' in the Humanities? – Support for Projects Combining and Synergizing Qualitative-Hermeneutical and Digital Approaches*. The projects, covering diverse fields of the humanities and using multiple digital methodologies, were encouraged to carry

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1   See e.g. Jason Heppler, "What is Digital Humanities," accessed January 23, 2023, https://whatisdigitalhumanities.com/., Melissa Terras, "Quantified Digital Humanities," UCL Centre for Digital Humanities, accessed January 23, 2023, https://www.ucl.ac.uk/infostudies/melissa-terras/DigitalHumanitiesInfographic.pdf., Anne Burdick, Johanna Drucker, Peter Lunenfeld, Todd Pressner and Jeffrey Schnapp, *Digital Humanities* (Cambridge: MIT Press, 2016)., David M. Berry and Anders Fagerjord, *Digital Hiumanities: Knowledge and Critique in a Digitale Age* (Cambridge: Polity, 20).

2   Sybille Krämer, "Der 'Stachel des Digitalen' – ein Anreiz zur Selbstreflexion in den Geisteswissenschaften? Ein philosophischer Kommentar zu den Digital Humanities in neun Thesen," position paper of the keynote speech at the annual conference DHD 2018 at Cologne University.

out not only their individual research but also exploration of the interface between the two epistemological approaches at a theoretical and methodological level. All projects at the heart of this book use mixed methods approaches to conduct research in their various fields. The results of the projects are at the core of this volume. The research projects developed and used a wide range of methods to explore their research questions and their specific cultural data corpus. The term digital humanities, therefore, implies an abundance of very heterogeneous digital methods such as text mining, visual/auditive pattern detection, network analysis, statistics, visualization tools—which are themselves objects of humanistic interpretation. All these different methods are presented in this book and reflected upon in practice. We see it as strength of this book that we can place quite different disciplines side-by-side in order to jointly ask and compare how digital methods confront humanities subjects with different challenges.

By doing so, the book provides insights into concepts on how to work together in such projects in an interdisciplinary way. It addresses some of the most virulent questions in the field by exploring the potentials that arise from combining humanities issues with digital methods in the form of hands-on reports, productive findings and reflections. It contains an analysis of new terms that are emerging in practice and from co-productive teams, dealing with corpus as well as cultural data, methodologies including the status of machine learning as well as visualizations and, last but not least, new forms of collaboration.

Mixing methods, mixing research paradigms

In the first volume of this book series Silke Schwandt refers to the distinction "between computing methods being used '*for* and *in* the humanities'"[3], as brought up by Edward Vanhoutte. The prepositions 'in' and 'for' express profoundly different relationships between methods and research fields. This simple discrimination, therefore, contains the challenges in the field, as mixing methods leads to mixing research paradigms, nothing more and nothing less. Thus, the idea of mixing methods is also about abandoning the strict and simplified dualism of qualitative and quantitative research in a productive way. The term mixed methods is relatively new. It was adopted from the social sciences during the last two decades to describe the intersection of the approaches. This type of research design was described and philosoph-

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3   Silke Schwandt, *Digital Methods in the Humanities. Challenges, Ideas, Perspectives* (Bielefeld: Bielefeld University Press, 2020), 7.
     Edward Vanhoutte, "The Gates of Hell: History and Definition of Digital | Humanities | Computing" in: Melissa M. Terras, Julianne Nvhan and Edward Vanhouette (eds.): *Defining Digital Humanities: A Reader* (London: Routledge, 2016), 120.

ically reflected upon in empirical social science most influentially by John Creswell. He uses the term to explain how to mix different methods "in all phases of the research process" and how in the process different "sets of beliefs" and "theoretical lenses", for example a post-positivist, a constructivist or a pragmatist worldview, lead to different methodologies.[4]

Originally developed for the analysis of social or natural science data, digital humanities projects can adapt the idea of designing a mixed method study that relates quantitative data to qualitative interpretations. It sounds like a "wild card" or even "epistemological anarchism" as reasoned by Paul Feyerabend in his essay *Against Method* as a means to scientific progress.[5] But it is not, because it opens up different methodologies, while the choice of methods is not arbitrary at all but cautiously and rigorously adjusted to the research questions and the research objects. The idea of mixing and composing methods in a research design has turned out to be very productive at different levels, although in another way than in the social sciences: Digital humanities do not correspond to quantitative social sciences; instead, the epistemological quality of digital humanities uses digital tools working on largely qualitative data. Cultural data, however, is not fact, but a cultural product and, moreover, a transformation of materiality. The need for new methods in the humanities is grounded in new research questions and the transformation and/or production of digital cultural data. The transformation of culture in data and networks at many levels, a process that has covered more and more areas during the last decades, can be answered in unprecedented ways with the help of digital methods. This means that a combination of traditional qualitative and innovative digital methods might address the problems and research questions concerning digital corpora in a novel way. It might even mean to deal with the societal questions of who owns culture and who monetises it, and what role open-access research can play.

Creswell combines different definitions of mixed methods by highlighting key characteristics of this research design such as the "researcher collects and analyses persuasively and rigorously both qualitative and quantitative data" or she/he "mixes (or integrates or links) the two forms of data concurrently by combining them (or merging them), sequentially by having one built on the other, or embedding one within the other."[6] The added value of this approach lies in the enhanced understanding it may give to a study, and also in the possibility that deficits of qualitative or quantitative methods can be balanced out by combining them. Creswell distinguishes various mixtures and sequences of research phases along a classification of

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4   John Creswell, *Qualitative, quantitative and mixed methods approaches* (Thousand Oaks, California: SAGE, 2003), 208–225, 2 and 39.

5   Paul Feyerabend, *Against Method. Outline of an anarchist theory of knowledge* (London: Verso, 2010).

6   Creswell, *Qualitative, quantitative and mixed methods approaches*, 5.

their methods such as "sequential design", "multiphase design", "embedded design" or "exploratory design".[7] The types differ in how and when they collect data and mix methods. For example, a research project may start with qualitative research and then, in a second sequence, transform the research to quantitative methods, or the other way round. Both parts can play a balanced role or one part is given more weight than the other gets.[8] It becomes obvious that the idea and practice of mixed methods is challenging for all research paradigms.

The projects in this book took the idea of mixing methods as a starting point, and adapted the research designs to their needs. At the same time, all research projects productively question this demarcation and the clean separation between approaches and methods. The idea of mixed methods is the guiding principle of the research projects gathered here. They systematically combine qualitative and quantitative approaches, without immediately assigning one approach or paradigm to the humanities or computer science. Computer scientists have recourse to hermeneutic interpretation and humanities scholars also process data. This introduction presents the different approaches and critically reflects on the epistemic implications that emanate from them.

Cultural data and the culture of data

Humanities data are distilled from heterogeneous sources, specifically chosen and embedded in interpretative patterns that allow for a lot of greyscaling. While the words and ideas are precise, the connections between them are negotiable, evidently dependent on the question at hand and the perception of context. At the same time, digital data occupy the large space between the diversity of humanities and the often quantifiable and objectifiable dimensions of data in natural science and engineering. And yet, even here the epistemic and epistemological contexts are shaped by culture: the culture of native language (even if we speak English), the culture of teamwork, and the habits of the field, the department or the company. As such, digital humanities are less a meeting of different kinds of data or methods than one of different cultures of handling data and applying methods.[9]

We can problematize the very idea of data with Johanna Drucker, who wrote in the first volume of *DHQ* in 2011 that "*[c]apta* is 'taken' actively while *data* is assumed

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7   Creswell, *Qualitative, quantitative and mixed methods approaches*, 208–225. See also Udo Kuckartz, *Mixed Methods. Methodologie, Forschungsdesigns und Analyseverfahren* (Wiesbaden: Springer, 2014), 81–83.

8   Kuckartz, *Mixed Methods*, 2014, summarizes these different types in Kuckart Chapter 2.

9   On this issue see Ludwik Fleck, *Genesis and Development of a Scientific Fact*, New Edition (Chicago, University of Chicago Press, 1981). Michel Foucault, "The Discourse of Language" trans. Rupert Swyer in: *Social Science Information* 10/2, 1971, 15–17.

to be a 'given' able to be recorded and observed. From this distinction, a world of differences arises. Humanistic inquiry acknowledges the situated, partial, and constitutive character of knowledge production, the recognition that knowledge is constructed, *taken*, not simply given as a natural representation of pre-existing fact."[10] Digital humanities projects are problematizing the fact that their data are constructed, because cultural data usually present objects which have not been distilled from technical instruments but have been produced by an author or artist in the first place. Therefore, cultural data never suit the idea of 'raw data' easily, although cultural data can be experimentally treated as raw data. This assessment of data as something unsharp and fluid saves digital humanities researchers from viewing their data through the positivist lens.

A classical differentiation between digital and analogue data is that while analogue data constitute a continuum, digital data present a sequence of states or signs. William J. Mitchell has given a comprehensible metaphor in 1992 already to mark the difference between the both: "The basic technical distinction between analogue (continuous) and digital (discrete) representation is crucial here. Rolling down a ramp is continuous motion, but walking down stairs is a sequence of discrete steps – so you can count the number of steps, but not the number of levels on the ramp."[11] This basic distinction can serve as a heuristic to differentiate the status of cultural objects that change not in their symbolic meaning but in their physical state through digitization, thus offering new starting points for research and reflection.

Digital humanities work with digital native or digitized material. Digital native data may be machine readable texts or digital photography. Digitized data may be digitized manuscripts, graphics, maps, analogue films or photographs or sound recordings. At a second level, digital objects are networked in digital archives—locally on a hard drive or globally in the internet through metadata. If cultural objects are converted into digital codes or if cultural objects are products of digital technology initially, new starting points for research open up because the very form of existence of digital objects offers a different interface for algorithmic and numeric operations. The starting point for the projects presented in this book is, therefore, a digital corpus of cultural material that has been assembled in many ways.

From reading the research chapters in his book, it becomes clear that the heuristic dualism of the digital and the analogue is not always satisfactory, nor is the dichotomy between quantitative and qualitative research. Digital, quantitative and non-digital, hermeneutic research methods are often seen as different perspectives. But, when addressing the mixed methods agenda, one of the most interesting findings has been that, in fact, they merge much more than usually thought of. Specif-

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10   Johanna Drucker, "Humanities Approaches to Graphical Display" in: *DHQ*, 2011.
11   William Mitchell, *The Reconfigured Eye. Visual Truth in the Post-Photograph Era* (Cambridge, Mass. et al.: MIT Press, 1992), 4.

ically, it is hardly possible to define where traditional, hermeneutic research ends and where its digital counterpart begins. Both approaches comprise iterative processes, both are largely based on comparison and analogy, and both combine specific questions with overarching perceptions of relevance. However, in day-to-day work, epistemic and epistemological gaps become apparent as well and challenge the theoretical discussion when, for example, terms are used in very different ways and the expectations of what is productive outcome and insight differ profoundly. The project chapters and their case studies provide insight into the extent to which digital methods are simultaneously restrictive and productive in their programming – how they enable and limit cultural data analysis.

Interdisciplinary teams as a form of collaboration

Digital humanities projects are usually carried out in a team and are interdisciplinary by nature. They bring together researchers from backgrounds in the humanities and computer science. For this reason, there is the question of how the work of computer science and humanities is split and balanced in the projects and how these areas are mediated in the course of the research, without having to assign the role of an auxiliary science to one discipline. Interdisciplinarity is the core challenge of all complex research projects addressing contingent phenomena. It is essential to balance highly specialized expertise of the involved fields with the need for communication and coordination of research questions and results. In digital humanities, the parameters of interdisciplinarity between the humanities and computer science seem to be clearly delineated, with the latter often serving to solve the problems of the humanities while bringing the former to tears with the imperatives and prohibitions of ontological structures. Yet, the collaborations in the mixed methods projects show that we should think twice in this regard.

All the projects assembled in this volume set out to address digital humanities topics on a par with the resulting research relevant and pioneering for each of the involved fields. They set out to pool particular approaches and methods, ideas and questions and to build research practices from this pool. Their accounts provide insight into the additional workload originating in the need to agree on terms, meanings and the perception of relevance. They point to pitfalls and conceptual conflicts, such as in publication practices and in copyright uses, and to the establishment of new routines of validation or surprising insights into one's own subject. They also aim to engage with questions of societal justice, such as those related to the availability of specific types of data that have been conserved over centuries, while other types have disappeared. For example, information on colonial structures may be more prominent than about vernacular buildings, information on male actors is more easily available than on female. As such, the projects with their individual ways

of solving the task at hand prove to be laboratories of interdisciplinary convergence. Their experiences sketch ways to make such joint projects work epistemically and methodologically as well as spatially and organizationally.

A common denominator is the iterative processes of evaluation both in terms of questions, procedures and (preliminary) results. Alterations, often between human and technological contributions, and not necessarily only a human-in-the-loop set-up, ensure the ongoing validation of expectations, terminologies and outcomes. In some cases, this is achieved by setting up not only regular meetings to coordinate project parts but by actually co-working. Yet, the involved teams of most projects are inter-institutional and non-local: In some cases, academic and non-academic institutions cooperate. In others, the involved partners belong to different universities in different cities, even abroad. Against this background, setting up a joint space for cooperation, getting to know and growing to trust each other prove once more to be critical to the success of the proposed research. Thus, although digital humanities enable decentralized cooperation, they do not overcome the mechanisms of human collaboration rooted in actual social relations. It is frequently the trust in each other and an already well-established interdisciplinary cooperation in other contexts that allow stepping out of the established frameworks to address digital humanities and to mix methods.

This is not yet the end of the overarching findings from the comparison of the groups. In retrospect, many projects expressed their experiences of over- or under-estimating challenges and/or possibilities concerning their partner disciplines. It referred not to the general feasibility but to issues of, for example, data quality and data complexity. Instead of hindering the work, it required a constant adjustment of resources towards the research goals. These experiences point once more to the epistemic dimensions of digital humanities as a still emerging field in which the negotiation of terms, concepts and aims is in a state of flux. Any shifts here influence the adjoining areas in computer science and humanities, ask for adaptations and mirror back resulting discourses. As such, the experienced interdisciplinarity circles the disciplinary habits far beyond digital humanities and mixed methods projects.

None of the projects failed.[12] Yet, the reports refer to critical points rooted in the very processes that enable digital humanities and the application of mixed methods. The critical one for exploratory research is the copyright for data. While the general use of digitized or digital data sets is often possible, the means needed to communicate the research itself and the sustainable availability of data and research for validation and continuation by other teams are frequently barred. The latter, however, is

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12   On the issue of failures, see Dena Fam and Michael O'Rourke (ed.), *Interdisciplinary and Transdisciplinary Failures. Lessons Learned from Cautionary Tales* (Abingdon, Oxon; New York, NY: Routledge, 2020).

an indispensable part of quality management and routinely required by funding institutions. The resulting quandary forces research to go sideways to address relevant issues from a cumbersome angle or to ignore some topic entirely. Another observed issue, which has been overcome by all the projects in this funding line though, poses a challenge to the further development of explorative research in digital humanities, especially in the context of mixed methods. It is the hidden complexity. On the one hand, there is the impossibility of understanding the other discipline's cutting-edge research situation and, on the other, one's own ignorance concerning the intrinsic complexities of one's knowledge and order. For the implementation of mixed methods in digital humanities, it might mean to set up research proposals that are structurally different from the usual mono- or interdisciplinary projects, where the scope of conceptual overlapping is clearly known in advance.

Structure of the book

The book has a three-level structure. The first level of the book situates the digital humanities conceptually and historically and discusses the different approaches of mixed methods in the cooperation between humanities and computer science in general. Andrew Prescott provides a brief and concise history of the digital humanities. Beyond that, the focus is on general questions of methodology, on the debate as to how the involved fields change when they practise mixed methods, on what it means to work with uncommon data, and what it means when scholars present results obtained from data and research approaches uncommon in their own field.

The second level is a glossary of central terms for the research field of digital humanities. It discusses the following terms each with definitions provided by the *Oxford English Dictionary* and by the involved research projects, distilled from the essays themselves and from comments added during general discussions: *Paraphrase; Similarity; Corpus*; *Human-in-the-Loop-Approach; Visualization; Canons; Modelling; Machine Learning; Quantification*; *Uncertainty*; and *Heterogeneity*. The exchange is based on the experience of the involved research projects and points towards the complexity of concepts shaping digital humanities at the moment and creating subgroups as well as subtopics while cross-connecting in search of new approaches and fruitful cooperation. The terms are understood to provide bridges between the project chapters to demonstrate parallels and storylines. The glossary terms provide no final definitions but sketch a current state of discussion between the involved fields and foci. It is understood to underline the still ongoing negotiation of meaning for many of these terms that threaten to create new spheres of misunderstanding and disconnection.

The third level contains the 10 research chapters of the research projects involved. They range from literary studies to musicology, image studies, history of

religion, history of architecture, history of linguistics and text analysis. All chapters follow a similar scheme. They not only describe their approach, but also deal with their respective understanding of data or corpus, method or analysis. They describe in detail the team's collaboration, division of labour and processes. Here, we are especially interested in reflecting what is challenging in the projects, what the novel types of results are and what lead to disruptions in the process.

The work of the 10 projects assembled here includes different disciplinary spheres. The expertise from classical humanities such as literary studies and philology, regional linguistics and histories to visual, urban and media studies faces fields of competence in computer science concerned with machine learning and image recognition, corpus linguistics or interface design. Between them, some areas materialize that are already conceptually mixed and embody digital humanities, such as computational musicology and computational linguistics or information visualization, circumscribing the fluidity of the epistemic processes we observe today. In the sense of the funding line and this book, not only did the projects work towards the proposed results but they were also laboratories themselves. As such, the actual research results such as digital tools or conceptual insights are manifold and materialize largely in the relevant journals while the book compiles contributions that focus on the process-related outcomes of mixed methods. In this context, projects without overlapping content not infrequently share methodological challenges or digital humanities-related foci, as expressed in the glossary terms.

Digital Plato (Innovation in Loops: Developing Tools and Redefining Theories within the Project 'Digital Plato') focuses on the detection of paraphrases for Plato in ancient Greek sources. Since many of them neither referred to the source nor did they quote verbatim, the project came to reconsider concepts such as 'paraphrase' and 'intertextuality' in literature in its process to develop a tool for paraphrase search.

In contrast, the historical normativity of a literary corpus allowed the project *Reading at Scale* (A Digital Analysis of German Novellas from the 19th Century) to initiate an iterative process of operationalization towards a continuous shift between abstract (distant) representations of literary texts and (close) analytical text interpretations.

QuaDrama (On Designing Collaboration in a Mixed-Methods Scenario. Reflecting Quantitative Drama Analytics) utilized German-language plays to analyse the textual and structural properties of dramas. With a focus on character types, the team developed an interface to jointly define and annotate the corpus with the aim of automatically detecting and quantitatively analysing different dramatic character types.

For many projects, a hitherto unsolved issue, vagueness, ambiguity or fuzziness of knowledge triggered the mixing of methods. *DhiMu* (Dhimmis and Muslims – Analysing Multi-Religious Spaces in the Medieval Muslim World) developed an in-

terface allowing tracing and visualizing religious minorities in the medieval Middle East in such a way as not to eliminate the uncertainties concerning source, time and place but to make them useable for interpretation. As such, it enables the integration of formerly marginalized source texts in this context.

ArchiMediaL (Computer Vision and Architectural History at Eye-level: Mixed Methods for Linking Research in the Humanities and in Information Technology) aimed to overcome the absence of meta-information of digitized architectural depictions by using computer vision to recognize architectural image content. When the intended corpus turned out to be unsuitably heterogeneous to train the algorithms, the team came up with a tool to crowdsource serviceable image sets instead.

BachBeatles (Musical Schemata: Modelling Challenges and Pattern Finding) set out to find and model the characteristics of voice-leading schemata present in western music. For automated pattern recognition, two key challenges had to be overcome: the polyphonic structure of music as opposed to the sequential structure of text, and the highly flexible nature of these patterns, as the structural notes in individual voices can be elaborated in very different ways.

The interplay from text and rhythm is at the core of project *Rhythmicalizer* (Free Verse Prosodies: Identifying and Classifying Spoken Poetry Using Literary and Computational Perspectives). It synthesizes the rhythmical features of modern poetry by aligning the written text with the speech of the poet. The visualizations found a means to classify many poems along a fluency/disfluency continuum and provided insight that was applied to question established categories and to develop teaching units at the high school level.

The communication about climate change inspired the project *ANCI* (Interpreting Climate Images on the Internet: Mixing Algorithmic and Interpretive Views to Enable an Intercultural Comparison). It analysed the means to visually communicate climate change depending on communication and cultural context. Its team traced its learning curve as a shift from an interpretative towards a structural view of the images in which pictoriality came to be understood as the interplay of images at various levels.

The interpretation of historic texts was a challenge for *Handwriting* (Detecting Authorship, Hands, and Corrections in Historical Manuscripts. A Mixedmethods Approach Towards the Unpublished Writings of an 18th Century Czech Emigré Community in Berlin), in which the detection of author and scribe, cultural background and language sought for the cross-breeding of text- and image-recognition. The resulting open-source software tool not only helps to unveil the interconnected history of an eighteenth-century Czech émigré community in Berlin but also promises applicability beyond a single language and script.

The project *HerCoRe* (Encoding, Processing and Interpreting Vagueness and Uncertainty in Historical Texts – A Pilot Study Based on Multilingual 18th Century

Texts of Dimitrie Cantemir) addressed the vagueness of language in processes of translation between Latin, Romanian and German in eighteenth century. Aiming to develop a tool for digital text analysis beyond keyword search and statistical information, the work done on the required ontology proved crucial and it currently outshines the ongoing research on annotation. It mirrors back onto the underlying hermeneutic research and inspires new approaches to historical studies.

As the results of the projects so far show, the text-related digital humanities seem to be the most advanced at the moment for various reasons and are developing a variety of approaches and questions. As already thematized above, however, the mixing of methods tapped into further systems of representation of culture such as images, architecture, spoken presentation and music. It touched on relevant questions: How to define the epistemological challenges and opportunities when combining established hermeneutic and sometimes experimental digital approaches in research on literary studies, art history, musicology, and related fields? What are the theoretical and methodological principles across all disciplinary digital approaches? How is it possible to work around conceptual roadblocks towards not only a joint result but also an actually joint understanding of issues at hand in digital humanities?

This volume focuses on driving innovation and conceptualizing the Humanities in the 21st century. It serves as a useful tool for designing cutting-edge research that goes beyond conventional strategies. Its aim is to move beyond the simplifying concepts of 'real science', hard and soft data or qualitative and quantitative analysis. Digital humanities challenge traditional conceptions of research objects and approaches. At some points knowledge was generated to which one of the involved disciplines could not "formulate a question to which this knowledge would be an answer,"[13] because the knowledge simply could not be processed through the respective discourse and the result might not be what the researchers expected. This discomfiture as well as destabilization of habitual grounds is peculiar to digital humanities projects and is precisely what is to be highlighted here as a starting point for creativity and insight.

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13   This idea is taken from Claus Pias who wrote: "[...] plötzlich [entsteht] durch Geräte ein Wissen von Bildern, zu dem die Kunstgeschichte keine Frage formulieren kann, auf die dieses Wissen eine Antwort wäre, ein Wissen, das einfach vom kunsthistorischen Diskurs nicht verarbeitbar ist." Claus Pias, "Maschinen/lesbar. Darstellung und Deutung mit Computern", in: Matthias Bruhn (ed.): Darstellung und Deutung in der Kunstgeschichte (visual intelligence, Bd.1) (Weimar: Verlag und Datenbank für Geisteswissenschaften, 2000) 125–144.

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