digital scholarly editions beyond text

modelling art, film, and everything in between

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Digital Scholarly Editions Beyond Text



Computing in Art and Architecture

A Book Series by the Digital Art History Working Group and the Digital 3D-Reconstruction Working Group

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ARBEITSGRUPPE DER DIGITAL HUMANITIES IM DEUTSCHSPRACHIGEN RAUM e.V.

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Dissertation

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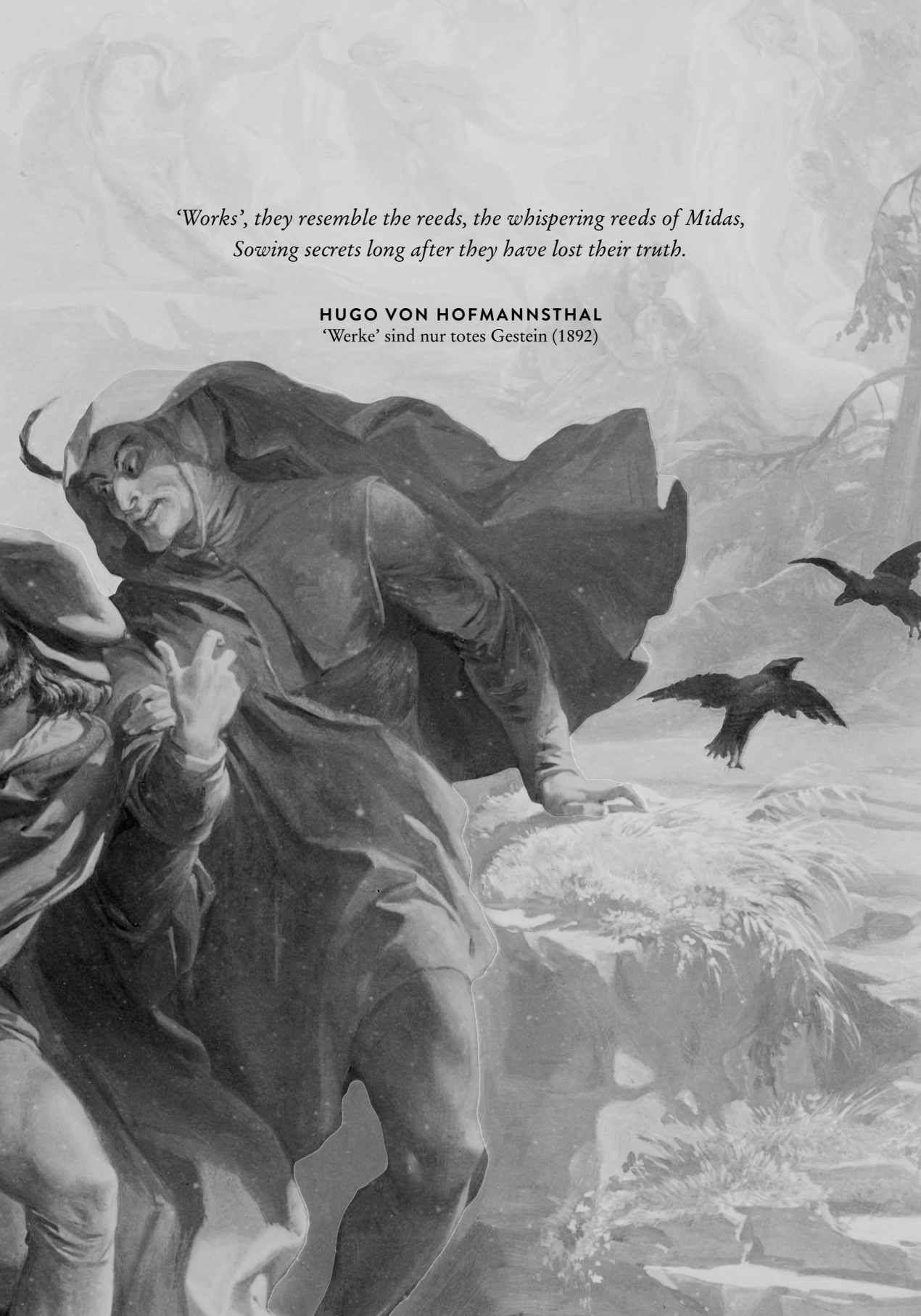
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'Works', they resemble the reeds, the whispering reeds of Midas,
Sowing secrets long after they have lost their truth.

HUGO VON HOFMANNSTHAL
'Werke' sind nur totes Gestein (1892)



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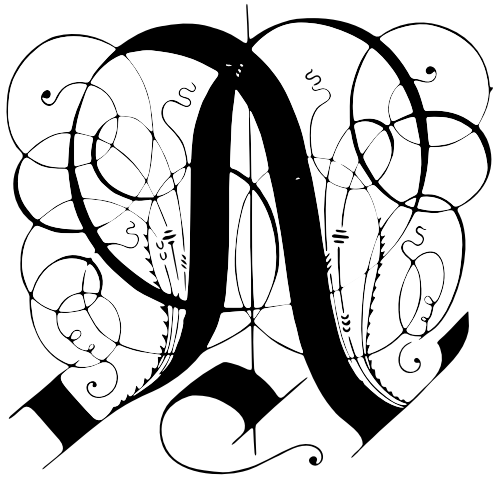
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preface

I wonder about the future – and the past – but never about the present. That might be, in essence, all you need to know about this book. (But I do, of course, invite you to read on.)

First things first: This book is based on my doctoral thesis which I submitted at the University of Cologne in October 2020 and defended in January 2021. Since doctoral dissertations must be published in the German system in order to secure the doctoral title, I wrote it with that in mind – half thesis, half monograph. Although I received no notes from my supervisors requesting any changes, I felt I could improve on the version I had submitted and withheld publication until I could revise it, however marginally or substantially. Some chapters benefitted from this more than others. Time is, after all, a limited resource. Almost three years after first committing my arguments to paper, I finally release them into the world. I do this in a hybrid open access format because that is an ethical choice for me. Sometimes, it's that simple.

This is where the simple part ends. There are some things that I ought to explain before we can proceed. Most of them concern the scope of the book, some of them the disciplinary background:

1. Clarifying "Beyond Text"
2. Assumptions Regarding Editions
3. Why *Digital* Scholarly Editions?
4. An Update on the Literature
5. On the Matter of Language

Before I begin addressing these points, I want to characterize this book very briefly in general: You will not find a tutorial within. This is not a handbook or a how-to guide. You will, in fact, find very few thoughts on

current technologies and the capacities or advantages and disadvantages of their implementation. This is not to say that those aspects of digital humanities research are not important since they are, self-evidently. But TEI, IIIF, ML, all those acronyms that you might or might not be familiar with, will only feature in the margins because this book is entirely concerned with the uncovering of principles. Calling it the 'discovery' of principles would be wrong. Most conceptual work is a work of reconceptualization in these contexts, not of invention. If there is originality to be found, it is within the connection of discourses, within the weaving of those webs that some will call 'theory' although that is too lofty a term to apply to this book. Methodologically, one of the central questions that will be explored throughout is whether it is possible to approach research in the digital humanities from the ground of thought rather than the parapet of practice. These interact, of course, and necessarily inform each other. Still, no practical work (in the sense of software development or application) was undertaken in the making of this ~~film~~ book and it is, if nothing else, a testament to this type of intellectual exercise, if you will. (Calling it an 'experiment' would be wrong, given the implications this word has for the 'scientificity' of research in the digital humanities. More on this under point **5**.) Now on to the list of clarifications:

1. CLARIFYING "BEYOND TEXT"

A digital scholarly edition *beyond text* could refer to a scholarly edition that is, in itself, presented in a non-textual way. It could also refer to an edition of non-textual materials. This book focuses on the latter, but these issues are interrelated, seeing as they both engage with the question of representational *Abbildbarkeit* ('the capacity to depict something in the image of something else').

The other limitation that I have placed on this book was a focus on visual work variance. In the discussion of filmic work variance, audio-visual aspects do play a role, naturally, but neither can I claim any expertise in auditory matters nor is the edition of such aspects entirely unexplored, although one could argue that theories about the edition of music works owe much to their philological antecedents and are themselves entangled in the edition of notation more so than the edition of

sound.[1] The edition of audio recordings, such as multi-versioned recordings by the same artist of the same song, would be very interesting to me and I suspect that rights issues have prevented any serious foray in that direction (unless there is such a project of which I am unaware), as one might also suspect in the case of scholarly film editions (where there have been some attempts which I will chronicle). I am thinking of the 1920s and the 1930s here, by way of example, of Louis Armstrong and the early days of jazz, of 78 rpm shellac records, many of which have been diligently digitized in the Internet Archive (<https://archive.org/>) where one can already find indications for the versioning of songs in a section called 'Related Music' – there, versions, compilations, and covers are differentiated and linked, with versions being defined as "different performances of the song by the same artist."[2] Armstrong's *I Can't Give You Anything But Love* from 1929 links to eight versions; however, while some of these are versions from later years, others appear to be reissues.[3] On the other hand, the *St. Louis Blues* performed by Duke Ellington and his Orchestra with vocalist Marian Cox in 1949 is not linked to the same song performed by Duke Ellington and his

---

1 The tradition of scholarly music editions has been influenced by textual criticism but poses its own challenges. For a long time, efforts were predominantly focused on the edition of (early) modern European composers and thus accommodated a particular type of common 'Western' musical notation. Editions of earlier works and other notation systems have often been published in the form of facsimile editions, if that, such as the *Monumenta Musicae Byzantinae* series. When it comes to digital editions, it should be noted that the MEI (Music Encoding Initiative) standard is derived from the TEI (Text Encoding Initiative) standard and acknowledges its Eurocentrism, see <https://music-encoding.org/about/> (accessed 30 October 2022). For further reading, see Christian Martin Schmidt, 'Editionstechnik,' in: *MGG Online* (= Die Musik in Geschichte und Gegenwart), ed. by Laurenz Lütteken, Kassel [et al.]: Bärenreiter / Metzler, 2016, online: <https://www.mgg-online.com/mgg/stable/13438> [first published in print 1995, published online 2016]. See also James Grier, 'Editing,' in: *Grove Music Online* (2001), online: <https://doi.org/10.1093/gmo/9781561592630.article.08550> [published in print 20 January 2001, published online 2001, bibliography updated 31 January 2014], and Friederike Wißmann, Thomas Ahrend and Heinz von Loesch (Eds.), *'Vom Erkennen des Erkannten:' musikalische Analyse und Editionsphilologie* (Festschrift für Christian Martin Schmidt), Wiesbaden [et al.]: Breitkopf & Härtel, 2007.

2 See, for example, the section on *I Can't Give You Anything But Love* by Louis Armstrong with the flip side of *Mood Indigo* by Duke Ellington, <https://archive.org/details/78_mood-indigo_louis-armstrong-and-his-orchestra-louis-armstrong-fields-mchugh_gbia0093720/> (accessed 16 January 2023).

3 Ibid.

Orchestra in 1932 with Bing Crosby as his vocalist.[4] This observation of mine is entirely random but suggests to me that an annotated, semantically enriched and cross-referenced scholarly edition of such a corpus of materials could be a desideratum from the perspective of musicology, especially since much work has already gone into their digitization.[5] In terms of curated collections, the Louis Armstrong House Museum has made many archival records available digitally[6] – I note this example because the intersection of editorial and archival concerns is an interesting one that we will briefly return to under point **3**. Generally speaking, there has been an increase in projects working on digital music editions in the last ten years. An example for this would be *Beethovens Werkstatt* (2014–present) which is primarily interested in applying principles of genetic criticism to Beethoven's compositional process and the traces it left in his manuscripts and other documents of the material *Überlieferung* ('transmission' – hereafter always translated as such although it is a flawed translation).[7] There are also projects that do not refer to themselves as digital scholarly editions although they could fall under that umbrella or are, at the very least, related to editorial efforts. One project that would fit this description is the *Measuring Polyphony* (2018–2020) project that digitally encodes late medieval music.[8] Equally noteworthy is the research done at the Austrian Academy of Sciences which presents several digital music editions, such as the *Passauer Liedertisch* (2018),[9]

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4 See <https://archive.org/details/78_st-louis-blues_duke-ellington-his-orchestra-marian-cox-wc-handy_gbia7014001b> and <https://archive.org/details/78_st-louis-blues-ein-blues-am-st-louis_bing-crosby-duke-ellington-and-his-orchest_gbia7013163b> (both accessed 4 January 2023).

5 The closest project that comes to mind with regard to the comparison of song versioning is the non-academic (but no less valuable) resource *SecondHandSongs*, <https://secondhandsongs.com/> (accessed 13 June 2023).

6 See <https://collections.louisarmstronghouse.org/> (accessed 4 January 2023).

7 See *Beethovens Werkstatt*, ed. by Bernhard R. Appel [et al.], Detmold University of Music, Paderborn University, Academy of Sciences and Literature Mainz, Beethoven House Bonn, 2014–present, <https://beethovens-werkstatt.de/> (accessed 4 January 2023).

8 See *Measuring Polyphony: Digital Encodings of Late Medieval Music*, ed. by Karen Desmond [et al.], Brandeis University, 2018–2020, <https://measuringpolyphony.org/> (accessed 4 January 2023).

9 See *Passauer Liedertisch*, Austrian Academy of Sciences, 2018, <http://www.digital-musicology.at/en-uk/edi_tisch_pre.html> (accessed 4 January 2023).

on their *Digital Musicology* platform.[10] Obviously, there is an entire, much more expansive world of such projects out there than I could reasonably list here.

All of this to say: Music works and sound are severely underrepresented in this book and could form a natural extension to the thoughts presented in it, someday in the future. For the sake of media theorists, I should also state that I am aware that the triumvirate of text – image – sound is not the sole distinction one might want to draw. Even within those categories, the definition of which is contentious to say the least, particularly when it comes to the much-discussed 'text' definition,[11] we may identify all kinds of phenomena, intermingled and otherwise. Sketchbooks, tapestries, comic books, murals. Sculptures, theatre productions, architectural works, video games. The list could go on and on. Sometimes we speak about objects. Sometimes about genres. All that I see are multimodal, multimedia units of meaning and their physical and ideational transmission. I would not want to pretend that the limits imposed on the scope of this book are necessarily compelling from a categorical or ontological point of view. Nor do I anticipate obstacles in eventually incorporating these expressions of art and culture into the thinking advanced in the following chapters. They would likely introduce new important points of divergence and a 'sharpening' of terminological differentiations. It should suffice to say that the importance of first branching out to pictures and then to 'motion pictures' when considering editions beyond text lies in the extension of dimensions that they provide: from the semiotic layer of notation that guides our perception of text towards *space* (with images) and *time* (with film). This already accounts for two important extensions in our conceptualizations, given that they are mirrored in other media, such as audio in the case of time-based media.

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10 See *Digital Musicology*, Austrian Academy of Sciences, 2018–present, <http://www.digital-musicology.at/en-uk/index.html> (accessed 4 January 2023).

11 In the context of digital editorial theory, Patrick Sahle has written about this most extensively; see Patrick Sahle, *Digitale Editionsformen* (Schriften des Instituts für Dokumentologie und Editorik; vols. 7–9), Norderstedt: Books on Demand, 2013 [the volumes are hereafter referred to as Sahle 2013a, 2013b, and 2013c where required].

As a last consideration when it comes to the scope of the book, I want to highlight that the subtitle of the thesis originally read *Modelling Medieval Picture Programmes and Modern Motion Pictures*. This feels more precise than the subtitle I chose for the published version, but it is also misleading and here is why: The book is not a comparison of medieval picture programmes and modern motion pictures. Singling out epochal affiliations suggests that I want to relate them to each other. I do relate, but I do not relate medieval picture programmes (or picture cycles) and modern films in any way that is supposed to infer some kind of *Erkenntnis* ('insight') about historical times and different types of cultural expression. The conversation in this book is merely a conceptual one about the principle of edition, one that benefits from considering different (multimedia) evidences and the different (or similar) considerations we have to entertain in terms of editorial concern. I think this will become even clearer when tracing the arguments of the book through the chapters and learning how they connect and interact in a linear reading (which is how the book is supposed to be read, although I realize that the interdisciplinary nature of the book invites selective reading). Furthermore, the focus of the book is as narrow as it is broad – neither do I cover any and all kinds of medieval picture programmes nor do I cover any and all kinds of film variance. The book is Eurocentric and, in some ways, more specifically Germanocentric, if such a word exists. At its heart lies a source of knowledge and a limit of knowledge.

2. ASSUMPTIONS REGARDING EDITIONS

Why pursue the central inquiry of this book at all? There are different ways to answer this, several of them good and right. We can approach this from two directions: On the one hand, we could say that the prevalence of digital scholarly editions has changed the landscape; that there is now a different framework for different editorial objects, one that favours image, motion, sound. We could say that the transformational process that scholarly editions are undergoing naturally calls into question whether the notational reproduction of 'text' should not rather be replaced with a notion of reproducing 'content' in other shapes and forms, especially given how multimedia-oriented 'the digital medium' and subsequently

digital scholarly editions already are; hence the increased incorporation of 'digital facsimiles' (more on the question of *digital* scholarly editions under point **3** – and more on this entire topic throughout, particularly in **CHAPTER III**).

On the other hand, we could justify the inquiry of this book through the consideration of the variety and diversity of cultural heritage as such, rather than the changed media environment in which we might embed its representation. Personally, I would emphasize this perspective. It stands to reason that there is a degree of craftsmanship involved in editorial work; that questions of feasibility have always played a role in crafting the (re-)presentation of information – and it is therefore entirely fair that Martha H. Fleming, in her 1999 edition of the *Genus nequam* pope prophecies, should have stated: "Unfortunately it is not possible to construct an adequate apparatus for an 'edition' of the images similar to that for the text."[12]

There is, however, a traditional lack of interest in the theoretical implications of an 'edition' of images that we must recognize regardless of how feasible an implementation might or might not be (and one supposes that these thoughts would go both ways: that one would only know whether an implementation is possible if one had tried conceptualizing it). I do not wish to characterize this as a neglect, necessarily, but rather as an effect of a particularized academia where disciplinary boundaries seem to pose barriers of a real kind, the kind that guides conventions and inhibits cross-domain imagination. In the case of art history, the challenge that presented itself during the writing of this book was not one of digital considerations but rather of hermeneutical ones; meaning that it was entirely unclear what threads one might pull on if one wanted to pull together a conceptual (or, indeed, 'theoretical') foundation on which to build the reflection necessary to give any and all endeavour in the (digital) humanities structure, meaning, purpose, and purchase in

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12 Martha H. Fleming (Ed.), *The Late Medieval Pope Prophecies: The Genus nequam Group* (Medieval and Renaissance Texts and Studies; vol. 204), Tempe: Arizona Center for Medieval and Renaissance Studies, 1999, 17.

posterity.[13] As a side note: The term 'art' in the subtitle of this book is merely used to indicate the subject of the discipline of art history, not any value attachment (e.g. to imply that films could not be art which is not something that I would propose) or otherwise fraught relationship with this type of notion. You will find that I rarely, if ever, refer to the *Bildwerke* ('picture works') that I will be discussing in this way and I would like to be excluded from any narrative complicating this matter of discoverability, even though I acknowledge that any serious discussion of the term would have to be much more involved.

To summarize the philosophy underpinning the entire book, I would like to believe that it proceeds from the following suppositions: (1) that the humanities (in the German sense of *Geisteswissenschaften*) are concerned with the totality of cultural heritage and record, and that their task of making-sense requires them to have a comprehensive view on these sources as well as reliable access to them; (2) that digital scholarly editions serve the same function as non-digital scholarly editions, viz. the preservation and presentation of extant documents, artefacts, and monuments (i.e. material manifestations of human expression) that are carefully reconstructed, contextualized, or otherwise enriched so as to offer information about their genesis and tradition in a way that may be

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13 It does not appear that the field of digital art history has, thus far, discussed the possibility of the digital scholarly edition of images. By way of example, the *Routledge Companion to Digital Humanities and Art History* (2020) does not, in all of its articles, make any mention of the potential creation of digital scholarly editions of multi-transmitted visual works, save for an acknowledgment of the existence of the *3D Scholarly Edition* initiative which is focused on the 3D modelling of architecture; see Lisa M. Snyder, "Research, Process, Publication, and Pedagogy: Reconstructing the World's Columbian Exposition of 1893," in: *The Routledge Companion to Digital Humanities and Art History*, ed. by Kathryn Brown, London / New York: Routledge, 2020, 459–479, here 473. On 3DSE and the attempts to relate digital scholarly editing to the 3D reconstruction of cultural heritage sites, see the *Scholarship in 3D Digital Publishing Cooperative*, <https://3dpublishingcooperative.com/about/> (accessed 4 June 2020; not accessible anymore 4 January 2023; see the archived version in the Internet Archive) and publications such as Susan Schreibman and Costas Papadopoulos, "Textuality in 3D: Three-Dimensional (Re)Constructions as Digital Scholarly Editions," in: *International Journal of Digital Humanities* 1 (2019), 221–233, online: <https://doi.org/10.1007/s42803-019-00024-6>, and Costas Papadopoulos and Susan Schreibman, "Towards 3D Scholarly Editions: The Battle of Mount Street Bridge," in: *Digital Humanities Quarterly* 13/1 (2019), online: <http://www.digitalhumanities.org/dhq/vol/13/1/000415/000415.html> (accessed 4 January 2023).

useful to a scholarly audience; (3) that such manifestations may contain symbol systems and through these symbol systems meaningful information and that such meaningful information is not merely, necessarily, or even primarily communicated through 'text' but can also be expressed, for example, in imagery; (4) that all such information should be part of the edition, especially vis-à-vis the analysis, description, and recording of a variance in transmission; (5) that the debate in or perhaps rather about digital scholarly editing that centres around the purported advantages and disadvantages that digital scholarly editions may have when compared to their printed counterparts is irrelevant to the edition of material that was not attended to in printed editions to begin with. This last aspect is coincidental but worthy of being stated at least once.

As the term 'textual criticism' clearly indicates, editorial theory is characterized by the primacy of textual scholarship, with different established editorial schools of thought giving voice to numerous convictions and conventions, often demarcated along national lines.[14] With that in mind, it follows (6) that the main focus of the book must not lie with the edition of texts (that a rich tradition of textual scholarship has already accounted for in many regards) but with the edition of other types of material, in particular visual material that arguably represents the largest corpus of cultural heritage material that has not yet been subject to scrutiny from this specific (and, admittedly, philologically informed, for better or worse) editorial point of view.

It further follows that (7) the premise of the book, i.e. its consideration of the different parts of an edition and how they relate to each other, necessarily moves towards formulating a type of model that may be able to accommodate new or otherwise reconceptualized components; and that model must be, given the focus on conceptualization, a conceptual model. How we may conceive of different types of models in the (digital) humanities will have to enter into the conversation as well.

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14 Several of these theories are discussed throughout the book, insofar as this knowledge of editorial theory is relevant to a further development of editorial theory. Here it should suffice to refer to Neil Fraistat and Julia Flanders (Eds.), *The Cambridge Companion to Textual Scholarship*, Cambridge: Cambridge University Press, 2013, and the vast archive of the journal *editio* as an introduction to the topic.

A scholarly edition is said to be an argument.[15] What does it argue? It argues for an interpretation of a 'document' or a series of 'documents', all of which are bound together by being perceived to be iterations of one 'work' or a 'corpus' of work bound to one person or one other commonality.[16] Hence, a scholarly edition is not an edition of a work so much as it is an edition of the material evidence of that work out of which it extracts what it perceives to be the work, with varying degrees of idealization. A scholarly edition is, therefore, no matter the format or medium, always the result of a modelling process: a process of ordering, shaping, compiling, relating, structuring. Nowhere is this more evident than in the creation of a stemma to relate the surviving witnesses of a work to each other (see **FIG. 1**).[17]

As it so happens, models and modelling processes are key components of computing as well. It might be for this reason that digital scholarly editing has a relatively long history to look back on and continues to draw

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15 This is a common notion; see, for example, Elena Pierazzo reporting that Shillingsburg, at a conference in 2013, "strongly maintained that the difference between editions and archives is that the former make a scholarly argument, while the latter do not." (Elena Pierazzo, *Digital Scholarly Editing: Theories, Models and Methods*, London / New York: Routledge, 2016 [first published by Farnham, Surrey [et al.]: Ashgate, 2015], 196.) See ibid. furthermore 151 and 155. See also the statement by Peter Robinson at the same conference: "A scholarly edition is still, as it has been for centuries, an argument about a text." (Peter Robinson, "What Digital Humanists Don't Know about Scholarly Editing; What Scholarly Editors Don't Know about the Digital World," paper presented at the *Social, Digital, Scholarly Editing* conference at the University of Saskatchewan, 11–13 July 2013, online: <https://doi.org/10.5281/zenodo.4024290>; this paper is also referenced in Pierazzo 2016, 196, there by the more incendiary title "Why Digital Humanists Should Get Out of Textual Scholarship".) See also Joris van Zundert stating: "Textual scholars from Bernard Cerquiglini (1999) to Peter Shillingsburg (2013) hold that an edition of a text is not that text itself, but an intellectual argument about it." (Joris van Zundert, "Screwmeneutics and Hermenumericals: The Computationality of Hermeneutics," in: *A New Companion to Digital Humanities*, ed. by Susan Schreibman, Ray Siemens and John Unsworth, Hoboken, New Jersey: John Wiley & Sons, 2016, 331–347, here 341.)

16 In the case of letter editions, digital editions are beginning to explore networks of people more widely; see, for example, the project *Berliner Intellektuelle 1800-1830*, ed. by Anne Baillot [et al.], Humboldt University of Berlin, 2011–2017, <https://www.berliner-intellektuelle.eu/> (accessed 4 January 2023). However, traditionally, letter editions are either centred around the correspondence to and from one famous person or between two famous people.

17 On stemmatology, see Philipp Roelli (Ed.), *Handbook of Stemmatology: History, Methodology, Digital Approaches*, Berlin / Boston: De Gruyter, 2020.

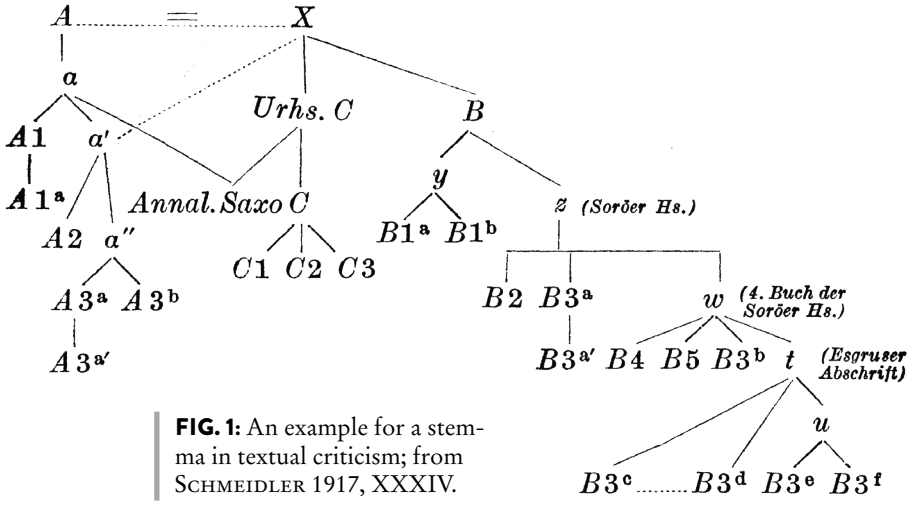


FIG. 1: An example for a stemma in textual criticism; from Schmeidler 1917, XXXIV.

interest within the community of humanities computing.[18] Although this has produced a sizeable amount of research literature on models and modelling in this specific context, typically focused on what is called 'data modelling' (which is then narrowed down to text markup),[19] the non-computational side of modelling an edition has been curiously absent in these discussions and its relation to the computational side of modelling has consequently proven elusive, one explanation for which is that both tend to be collapsed; meaning that the 'non-computational' part of modelling an edition, insofar as we understand conceptual modelling to be a 'non-computational' cognitive activity in this context,

18 On the history of the development of digital scholarly editing in the USA and the pioneering role it had there in the formation of digital literary studies, see Amy E. Earhart, *Traces of the Old, Uses of the New: The Emergence of Digital Literary Studies*, Ann Arbor: University of Michigan Press, 2015, esp. Chapter I 'The Rationale of Holism: Textual Studies, the Edition, and the Legacy of the Text Entire', 11–37.

19 The context here extends from the modelling of digital scholarly editions to a more general modelling of textual phenomena. See, for example, Fabio Ciotti, "A Formal Ontology for the Text Encoding Initiative," in: *Umanistica Digitale* 3 (2018), online: <https://doi.org/10.6092/issn.2532-8816/8174>; Julia Flanders and Fotis Jannidis (Eds.), *The Shape of Data in Digital Humanities: Modeling Texts and Text-based Resources*, London / New York: Routledge, 2018; and Arianna Ciula [et al.] (Eds.), *Models and Modelling between Digital and Humanities: A Multidisciplinary Perspective* (HSR; suppl. 31), Köln: GESIS, 2018, online: <https://nbn-resolving.org/urn:nbn:de:0168-ssoar-62883-7>.

is inherently present but not made explicit, either in the particular edition that is being created or in the pertinent discussion about modelling scholarly editions in general. Distinctions between different layers of modelling exist but they tend to favour the concrete over the abstract, the implementation over the conception.[20]

It is therefore necessary to engage with these meta-methodological questions in order to acquire a renewed understanding of the method of creating a scholarly edition, especially a digital scholarly edition where modelling as a scholarly process in the humanities and modelling as a computational necessity coincide.

All these basic assumptions that I have sketched only very briefly should suffice to create a rough outline of the book.

3. WHY *DIGITAL* SCHOLARLY EDITIONS?

As with the previous point, there are several ways to answer this and one of them has already been mentioned: The transition of scholarly editions from printed books to digital presentations changes what we can and cannot edit. To some extent, it is this technological evolution that allows us the edition of non-textual (or multimedia) materials in the first place. This would appear to be self-evident. The other obvious answer to the question above would be one that proponents of digital scholarly editions like to advance, namely that digital scholarly editions are superior to printed scholarly editions and are in the process of replacing them altogether, having already "become the norm in all disciplines."[21]

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20 This is made evident by the *concretization* and *Handhabbarmachung* ('making-manageable') of conceptual modelling in different disciplines; see David W. Embley and Bernhard Thalheim (Eds.), *Handbook of Conceptual Modeling: Theory, Practice, and Research Challenges*, Heidelberg [et al.]: Springer, 2011.

21 This sentiment is expressed in the "Manifest für digitale Editionen" that was published by the Institut für Dokumentologie und Editorik in March 2022 and gathered many signatories from the German-speaking regions; original: "Im Gefolge eines grundlegenden Paradigmenwechsels sind digitale Editionen inzwischen in allen Disziplinen der Normalfall." (Christiane Fritze [et al.], "Manifest für digitale Editionen," blog post, ed. by the Institut für Dokumentologie und Editorik, in: *DHdBlog: Digital Humanities im deutschsprachigen Raum* (11 March 2022), online: <https://dhd-blog.org/?p=17563> (accessed 6 January 2023)).

According to this view, there is no question to begin with. Focusing on *digital* scholarly editions when considering the theory of scholarly editions is not seen as the aberrant position; rather, it is implied that one would have to justify writing about scholarly editions from the perspective of a printed paradigm. I question these descriptions of the status quo and do not, as a general rule, endorse value judgements, but I do understand this position to be an assertion designed to secure the field of digital scholarly editing the consideration and resources it requires in order to fulfil its goals and tasks. There is a pragmatic dimension to this, one of infrastructure and academic credit, to name only two issues.

If we were to take the aspect of pragmatism seriously, we would have to engage in other discussions as well: One aspect to mention in this context would be, for example, the need for minimal computing solutions.[22] It might appear convenient for this book to retreat onto an abstracted ground of conceptual modelling and thereby avoid having to address such questions of project design but the opposite is the case: The book seeks to contribute to a technology-agnostic discourse about digital scholarly editions, insofar as that is possible, precisely in order to disentangle their conceptualization from the kind of technological implementability that can only be realized through a presupposed availability of certain technological, monetary, and human resources. This should not be mistaken for a pretence of universalism. It only means that even when or perhaps especially when we turn our conversations

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22 See, for one pragmatic approach to such a solution, Till Grallert, "Mapping Ottoman Damascus Through News Reports: A Practical Approach," in: *Digital Humanities and Islamic & Middle East Studies*, ed. by Elias Muhanna, Berlin / Boston: De Gruyter, 2016, 171–193, online: <https://doi.org/10.1515/9783110376517-009>. On minimal computing, see the DHQ special issue 16/2 (2022) and the introduction by the editors: Roopika Risam and Alex Gil, "Introduction: The Questions of Minimal Computing," in: *Digital Humanities Quarterly* 16/2 (2022), online: <http://www.digitalhumanities.org/dhq/vol/16/2/000646/000646.html> (accessed 6 January 2023). On the notion of 'minimal editions', see furthermore Susanna Allés Torrent and Alex Gil, "Minimal Editions in the Classroom: A Pedagogical Proposal," in: *Digital Humanities 2016: Conference Abstracts*, ed. by Maciej Eder and Jan Rybicki, Kraków: Jagiellonian University & Pedagogical University, 2016, 426–428, and Gimena del Rio Riande, "Mini Lazarillo," review, in: *Reviews in Digital Humanities* 1/4,5 (2020), online: <https://doi.org/10.21428/3e88f64f.de565313>.

about scholarly editions towards *digital* scholarly editions, we must be conscious of all that can (or cannot) follow from it.

The field of digital humanities has, in all its chequered history, rarely defined what the term 'digital' entails. I state this with some trepidation. Drawing attention to this issue risks incurring a mandate to do so here and now. The simple answer would be: It depends. This is reminiscent of the debate about defining the digital humanities as such, where one can encounter claims that "[t]he meaning(s) and parameters of digital humanities remain contested, to the extent that defining DH is a known rabbit-hole problem from which one may never return."[23] I have excised a relatively long primer about the digital humanities from this publication (which was originally included in the submitted thesis) because it was simply too topical; something I wanted to avoid. The important part is this: Whether one understands the digital humanities to be the successor of humanities computing, to sit at an intersection with new media studies or public humanities, or to be the present or future of the humanities in general will colour associations. For now, it should be enough to say that digital scholarly editions are commonly understood to be editions that are encoded in a markup language and accessed through an electronic visual display. They are typically web-based editions (rather than disk-based). This may sound very basic but I will leave it at that for the moment.

One thing to note is that discourses surrounding digital scholarly editions are markedly different from their print-oriented predecessors.[24]

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23 Steven E. Jones, *The Emergence of the Digital Humanities*, London / New York: Routledge, 2014, 7. A slightly contrarian view can be found in the deliberations of James Smithies who agrees with the need for soul-searching in the digital humanities but does not seem to be under the impression that much of it has occurred: "The digital humanities ran before they walked. Decades of effort during the humanities computing era have, in important ways, been undermined by too-rapid expansion of the field over the last decade. This has led to a situation where centres are flourishing, researchers have plenty of tools to choose from, and funding opportunities are relatively plentiful, but there have been few attempts to step back and question what it all means in relation to the raison d'être of the humanities." (James Smithies, *The Digital Humanities and the Digital Modern*, London: Palgrave Macmillan, 2017, 12.)

24 In addition to Sahle 2023 and Pierazzo 2016, see, for a start, Peter L. Shillingsburg, *Scholarly Editing in the Computer Age: Theory and Practice*, Ann Arbor: University of Michigan Press, 1996; Lou Burnard, Katherine O'Brien O'Keeffe and

A major divergence can be observed in the way that the term 'archive' is now being applied and invoked which corresponds with – but must not be confused with – the crucial role that cultural heritage institutions play in the digitization (preservation, cultivation) of resources. Shillingsburg noted as far back as 1996 that "the electronic archive may itself represent the editorial goal"[25] and Paul Eggert has discussed the archive/edition dualism further.[26] There are numerous examples for digital scholarly editions or projects adjacent to this field where the curation of an archival component is understood to be part of the scholarly editing process and the archive itself seen as a supplement to the resulting edition or even as the final result in itself.[27] The reference to 'archives' by scholars in the humanities in these contexts does not seem to be based in an engagement with the field of archival studies.[28]

When we look at digital scholarly editions or adjacent projects that have tentatively expanded on editorial objects by including visual material, we find 'archives' as well. The most well-known of these would

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John Unsworth (Eds.), *Electronic Textual Editing*, New York: Modern Language Association of America, 2006; Daniel Apollon, Claire Bélisle and Philippe Régnier (Eds.), *Digital Critical Editions*, Urbana [et al.]: University of Illinois Press, 2014; and Matthew James Driscoll and Elena Pierazzo (Eds.), *Digital Scholarly Editing: Theories and Practices* (Digital Humanities Series; vol. 4), Cambridge: Open Book Publishers, 2016.

25 Shillingsburg 1996, 165.

26 See Paul Eggert, "The Archival Impulse and the Editorial Impulse," in: *Variants* 14 (2019), 3–22, online: <https://journals.openedition.org/variants/570> (accessed 6 January 2023) [reprinted in revised form in Paul Eggert, *The Work and the Reader in Literary Studies: Scholarly Editing and Book History*, Cambridge: Cambridge University Press, 2019, as Chapter V 'Digital Editions: The Archival Impulse and the Editorial Impulse,' 80–92, online: <https://doi.org/10.1017/9781108641012.006>].

27 To name just two examples: *The Shelley-Goodwin Archive* (that is primarily an archive) and the digital *Faust* edition (which comes with an extensive archive, <https://www.faustedition.net/archive>). See *The Shelley-Godwin Archive*, ed. by Neil Fraistat, Elizabeth Denlinger and Raffaele Viglianti, New York Public Library [et al.], 2013–present, <http://shelleygodwinarchive.org/> and *Johann Wolfgang Goethe: Faust. Historisch-kritische Edition*, ed. by Anne Bohnenkamp, Silke Henke, Fotis Jannidis [et al.], Frankfurt am Main [et al.], 2018–present, <http://www.faustedition.net/> (both accessed 6 January 2023; in the case of the *Faust* edition, version 1.2 RC).

28 On the general issue of the invisibility of archival studies, see Michelle Caswell, "'The Archive' Is Not an Archives: On Acknowledging the Intellectual Contributions of Archival Studies," in: *Reconstruction: Studies in Contemporary Culture* 16/1 (2016), online: <https://escholarship.org/uc/item/7bn4v1fk> (accessed 6 January 2023).

be the *William Blake Archive* which first went online in 1996 and is one of the earliest digital – or, in the terminology of the day, 'electronic'[29] – resources presenting an artist's *œuvre* that spans both textual and pictorial elements, the latter of which were marked up and described with reference to the classification system Iconclass.[30] Since Iconclass will not feature much in the thoughts developed in this book despite what one might expect (the same goes for FRBRoo and CIDOC CRM, to name more examples), I wish to briefly explain this with regard to Iconclass specifically: Iconclass is not immediately suited for the description of transmission variance – the assumption underlying it being that a work consists of a singular visual presentation, meaning that the structural interrelation of variance between different versions or witnesses of a work cannot be explicitly expressed. Applying iconographic classifications according to the Iconclass system and vocabulary can be helpful for finding similarities in pictures across collections, which is to say that it is helpful for finding similarities in how content has been identified and tagged. Delineating components and modelling them in relation to

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29 The term was still in use as recently as 2007; cf. Kenneth M. Price, "Electronic Scholarly Editions," in: *A Companion to Digital Literary Studies*, ed. by Ray Siemens and Susan Schreibman, Malden [et al.]: Blackwell, 2007, 434–450.

30 For the project which is still online, albeit redesigned since its first launch, see *The William Blake Archive*, ed. by Morris Eaves, Robert Essick and Joseph Viscomi, Institute for Advanced Technology in the Humanities, University of Virginia, 1996–present, <http://www.blakearchive.org/> (accessed 6 January 2023). For background on the *William Blake Archive* and its methodology with regard to the picture component, including the decision by the editors to use Iconclass, see Morris Eaves, "Picture Problems: X-Editing Images 1992–2010," in: *Digital Humanities Quarterly* 3/3 (2009), online: <http://www.digitalhumanities.org/dhq/vol/3/3/000052/000052.html> (accessed 6 January 2023). See also Earhart 2015, 25–27. For information on Iconclass, see <http://www.iconclass.org/> (accessed 6 January 2023) as well as the literature evidencing how it was being applied in the late 1990s, cf. Carol Togneri, "Iconclass and its Application to Primary Documents," in: *Image and Belief: Studies in Celebration of the Eightieth Anniversary of the Index of Christian Art*, ed. by Colum Hourihane, Princeton: Princeton University Press, 1999, 259–270, and Jörgen van den Berg and Gerda G. J. Duijfjes-Vellekoop, "Translating Iconclass and the Connectivity Concept of the Iconclass 2000 Browser," in: *Image and Belief: Studies in Celebration of the Eightieth Anniversary of the Index of Christian Art*, ed. by Colum Hourihane, Princeton: Princeton University Press, 1999, 291–306. For a more recent evaluation of Iconclass, see Hans Brandhorst and Etienne Posthumus, "Iconclass: A Key to Collaboration in the Digital Humanities," in: *The Routledge Companion to Medieval Iconography*, ed. by Colum Hourihane, London / New York: Routledge, 2017, 201–218.

each other but also in relation to their computational representation requires the modelling of similarity as well as dissimilarity. Effectively, the question of variance that we encounter in scholarly editing requires us to think about frames of repetition and divergence more so than frames of identification (although the latter is a prerequisite for the former in practice; one does not need to adhere to any particular classification system to think this through in the conceptual context that we are talking about, however, as that would already impose limits on what can be described and the historical, cultural, and disciplinary perspective in which those descriptions are rooted). To reiterate: This book is not intended to provide a guide of best practices for implementing editorial ideas within the landscape of current conventions; such a book would be very useful, indeed, although I suspect that it would be more useful to curate living documents for this purpose in order to assist editorial projects in surveying options and solutions available at the given time.

More projects that should be mentioned when we consider prototypes for the (digital) edition of visual material include the digital edition of emblem books in several projects in the early 2000s, such as the *Emblem Project Utrecht* about Dutch love emblems of the 17th century which made extensive use of marking up the material with TEI/XML, albeit with a focus on the textual elements within the pictures, where the pictures are concerned;[31] and most recently and perhaps most promis-

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31 For the project, see <https://emblems.hum.uu.nl/> (accessed 6 January 2023). For the documentation of the project's encoding guidelines with regard to the images, see <https://emblems.hum.uu.nl/static/html/techcoding.html#div668> (accessed 6 January 2023). For more information on the background and development of the project, see, by one of its editors, Peter Boot, *Mesotext: Digitised Emblems, Modelled Annotations and Humanities Scholarship,* Amsterdam: Amsterdam University Press, 2009, esp. 51–72. See in connection with the *Emblem Project Utrecht* also the project *EMIT-X: Early-Modern Image and Text eXchange* which harvested the data from it to make it available in data collections to researchers, <https://portal.clarin.nl/node/4196> (accessed 6 January 2023). Other projects that involve digitized emblem books are the *Emblematica Online* by the Herzog August library (HAB) in Wolfenbüttel in cooperation with the University of Illinois at Urbana-Champaign (UIUC), see <http://emblematica.grainger.illinois.edu/> (accessed 6 January 2023); the French, Italian and Alciato emblem books presented by the University of Glasgow, see <https://www.emblems.arts.gla.ac.uk/> (accessed 13 September 2020; not accessible anymore 6 January 2023; see the archived version in the Internet Archive); and the Spanish *Biblioteca Digital Siglo de Oro* (BIDISO) by the Universidade da Coruña which hosts a number of resources, see <https://www.bidiso.

ingly, the *Welscher Gast Digital* which explicitly refers to itself as a *Text-Bild-Edition* ('text-image-edition') and includes an option to compare corresponding pictorial elements from the picture programme as transmitted in different manuscripts, according to a division into depicted motifs and actors.[32]

When it comes to digital scholarly editions of films, the situation presents itself differently since most projects of that type have been disk-based releases in the past. One should mention the 2006 study edition of *Metropolis* (1927) here which will be discussed in more detail in **CHAPTER V**.[33] At a conference in 2019 in Berlin, the developments in the field of digital editions were acknowledged and their effect on film editions discussed – see also point **4**.[34] Most importantly, the fluid transition between edition and archive can be found with digital film editions as well. An example for this would be the web-based edition *F. W. Murnaus ›Tabu‹ – Die Edition der Outtakes* by the Deutsche

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es/Emblematica/> (accessed 6 January 2023). Many of these efforts were realized in collaboration with each other as part of the *OpenEmblem* initiative.

32 For the project, see *Welscher Gast Digital*, ed. by Jakub Šimek, University of Heidelberg, 2015–present <http://digi.ub.uni-heidelberg.de/wgd/> (accessed 6 January 2023). For information on the conception of the project, see Jakub Šimek, "Archiv, Prisma und Touchscreen: Zur Methode und Dienlichkeit einer neuen Text-Bild-Edition des Welschen Gastes," in: *Vom Nutzen der Editionen: Zur Bedeutung moderner Editorik für die Erforschung von Literatur- und Kulturgeschichte* (editio / Beihefte; vol. 39), ed. by Thomas Bein, Berlin: De Gruyter, 2015, 335–366. For more information on the tradition of manuscript digitization at the library of the University of Heidelberg and how it has grown since 2001 to foster an infrastructure for the annotation of images, including the use of *Iconclass*, see Maria Effinger, Leonhard Maylein and Jakub Šimek, "Von der elektronischen Bibliothek zur innovativen Forschungsinfrastruktur: Digitale Angebote für die Geisteswissenschaften an der Universitätsbibliothek Heidelberg," in: *Bibliothek – Forschung und Praxis* 43/2 (2019), 311–323, online: <https://doi.org/10.1515/bfp-2019-2067>.

33 See, to start with, Anna Bohn, "Aesthetic Experience in Upheaval: Perspectives on Critical Film Editions Based on the Example of Metropolis and Battleship Potemkin," in: *Critical Editions of Film: Film Tradition, Film Transcription in the Digital Era*, ed. by Giulio Bursi and Simone Venturini, Pasian di Prato: Campanotto Editore, 2008, 24–39.

34 Cf. Ursula von Keitz [et al.], "Kritische Film- und Literaturedition: Perspektiven einer transdisziplinären Editionswissenschaft. Internationale Tagung an der Akademie der Künste, Berlin, 17.–19. Januar 2019," in: *editio* 33/1 (2019), 173–177, online: <https://doi.org/10.1515/editio-2019-0013>; esp. 176: "Vor dem Hintergrund der jüngeren Entwicklungen im Bereich der digitalen Edition stellt sich für die Filmedition im Speziellen die Frage, in welcher Art und Weise sie diesen medientechnologischen Rahmen aufgreift."

Kinemathek, Berlin, which consists of a database connecting materials such as outtakes, shooting script, daily reports, and more to document Murnau's work as a director on his last film *Tabu: A Story of the South Seas* (1931).[35]

Very generally speaking, editions or adjacent projects curating and presenting multimedia material do exist and their existence is confirmation that the environment within which these editions exist must factor into any conversation about them – but there is a difference between discussing environment and discussing implementation as I have stressed now several times and that is the point where this book (perhaps naïvely, depending on your disciplinary perspective) chooses to leave the path sketched by the majority of research literature and project presentations in the digital humanities. When I state that I wonder about the future – and the past – but never about the present, it is not because I am ignorant of it (or at least not entirely ignorant of it, hopefully). The present that we see before us in the digital humanities can never be captured, least of all in long-form writing. What we can do is take a step back and consider and reflect. Currently, there are editions of visual work; some of them are scholarly, some of them not, some of them somewhere in between; but there are few – and fewer theories about them still. Whether they be digital or not is important, but it is not the only thing that is important about them. I believe that this is the source of much frustration among scholars: The term 'digital' may enlighten the substructure of an edition but it may also obfuscate it. We need to find ways to talk about the digital (and what that means, exactly, is still open for debate) without talking about the digital or that which we perceive to be 'the digital' – otherwise, it threatens to suffocate everything besides.

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35 See *F. W. Murnaus ›Tabu‹ – Die Edition der Outtakes*, ed. by Bernd Eichhorn, Karin Herbst-Meßlinger, Martin Koerber, Deutsche Kinemathek – Museum für Film und Fernsehen, Österreichisches Filmmuseum, Friedrich-Wilhelm-Murnau-Stiftung, <https://www.deutsche-kinemathek.de/de/sammlungen-archive/sammlung-digital/murnaus-tabu> (accessed 6 January 2023). For the database, see <https://tabu.deutsche-kinemathek.de/> (accessed 6 January 2023).

4. AN UPDATE ON THE LITERATURE

Inevitably, any book that is years in the making will be overtaken by events eventually. I already mentioned the workshop in Berlin in 2019 (that I have no participant knowledge of) – since then, an entire collected volume on the theory of critical film and literature editions has been published that I could not take into consideration but wanted to highlight here as an obviously highly relevant recent publication: *Kritische Film- und Literaturedition: Perspektiven einer transdisziplinären Editionswissenschaft* (2022), edited by Ursula von Keitz, Wolfgang Lukas, and Rüdiger Nutt-Kofoth.[36] You will find that I have cited previous publications by many of the involved authors, but I could only perform a cursory reading of this volume. Strictly speaking, my incorporation of literature and references ended in October 2020 when I submitted the thesis. As you read the chapters, you will find that that is not entirely true – despite being full-time employed in a capacity that does not allow for research, I have tried to keep up with new publications and relevant materials. There is a document that contains a list of references, quotes, and names that I continuously updated when I could. To the best of my abilities, I have worked these into the book as I revised it, but I know for a fact that I have a folder with many articles that will never find mention, even though they probably should. There is simply no scenario in which I could accommodate the ongoing influx of literature produced in the digital humanities, philosophy, textual scholarship, art history, film studies, and semiotics, to name only the major disciplines at play here. What follows is an extremely abbreviated section in which I will spotlight some authors and literature that I would have liked to have read in full (in time). Perhaps it is indication enough of all that cannot be named and embedded, for the reasons stated.

One article that would have received more attention in **CHAPTER I**, had it been published one or two years earlier, is the article on "Facsimile

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36 See Ursula von Keitz, Wolfgang Lukas and Rüdiger Nutt-Kofoth (Eds.), *Kritische Film- und Literaturedition: Perspektiven einer transdisziplinären Editionswissenschaft* (editio / Beihefte; vol. 51), Berlin / Boston: De Gruyter, 2022, online: <https://doi.org/10.1515/9783110684605>.

Narratives" (2022) by Mateusz Fafinski.[37] I recommend reading it. Same goes for the concept of "Dynamic Facsimiles" (2021) that Dirk van Hulle has proposed in the context of genetic criticism.[38] Equally of interest to me, albeit in a different vein, is everything that Bernard Dionysius Geoghegan writes and has written. I am particularly looking forward to reading his monograph *Code: From Information Theory to French Theory* (2023).[39] While this publication might not seem like an obvious choice for a book about scholarly editions, during the course of writing my thesis I became greatly interested in the history of humanities computing, cybernetics, and the way they intersected with structuralism. I believe this to be relevant for anyone attempting to understand the current state of the digital humanities; in fact, I believe that anyone working on matters of principle will be confronted with these histories before long; and it would appear that this publication closes a crucial gap that has been left unattended by digital humanists for far too long. Other publications with a universal relevance would be Lorella Viola's *The Humanities in the Digital* (2023),[40] Max Kemman's *Trading Zones of Digital History* (2021)[41] and the publications from the *Studies in Digital History and Hermeneutics* series in general, as well as Joris van Zundert's doctoral thesis *Scholarship in Interaction* (2022),[42] to name a few that come to mind.

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37 See Mateusz Fafinski, "Facsimile Narratives: Researching the Past in the Age of Digital Reproduction," in: *Digital Scholarship in the Humanities* 37/1 (2022), 94–108, online: <https://doi.org/10.1093/llc/fqab017>.

38 See Dirk van Hulle, "Dynamic Facsimiles: Note on the Transcription of Born-Digital Works for Genetic Criticism," in: *Variants* 15-16 (2021), 231–241, online: <https://doi.org/10.4000/variants.1450>. See also Dirk van Hulle, *Genetic Criticism: Tracing Creativity in Literature*, Oxford: Oxford University Press, 2022, 200–202.

39 See Bernard Dionysius Geoghegan, *Code: From Information Theory to French Theory*, Durham: Duke University Press, 2023.

40 See Lorella Viola, *The Humanities in the Digital: Beyond Critical Digital Humanities*, Cham: Palgrave Macmillan, 2023, online: <https://doi.org/10.1007/978-3-031-16950-2>.

41 See Max Kemman, *Trading Zones of Digital History* (Studies in Digital History and Hermeneutics; vol. 1), Berlin / Boston: De Gruyter, 2021, online: <https://doi.org/10.1515/9783110682106>.

42 See Joris van Zundert, *Scholarship in Interaction: Case Studies at the Intersection of Codework and Textual Scholarship*, doctoral dissertation, Leiden University, 2022, online: <https://hdl.handle.net/1887/3464403>.

On the topic of modelling, the collected volume *Modelwork: The Material Culture of Making and Knowing* (2021), edited by Martin Brückner, Sandy Isenstadt, and Sarah Wasserman, has to be noted; in particular, the article on "Modeling Interpretation" by Johanna Drucker.[43] Johanna Drucker's *Visualization and Interpretation: Humanistic Approaches to Display* (2020) needs to be mentioned as well, of course.[44]

Regarding digital scholarly editions, there is the *C21 Editions: Scholarly Editing and Publishing in the Digital Age* project in the UK (2021–2024) and the publications in connection to that.[45] There are also publications like *Digitale Editionen im Spannungsfeld des Medienwechsels: Analysen und Lösungsstrategien aus Sicht der Informatik* (2021) by Andreas Oberhoff which is the polar opposite of this book, approaching the topic of digital scholarly editions from the technical perspective of computer science,[46] *Che cos'è un'edizione scientifica digitale* (2020) by Tiziana Mancinelli and Elena Pierazzo,[47] or an article about the reproduction of medieval manuscripts in the context of digital scholarly editions by Anna Cappellotto.[48]

There is more, so much more, especially when we look more generally at publications in digital history or the digital humanities, obviously, and more yet that I am unaware of. This extends to older publications as well. Publications in languages other than German and English. Where possible, as noted, I added recent literature directly to existing references and footnotes, provided I had occasion to peruse it. I also deleted

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43 See Johanna Drucker, "Modeling Interpretation," in: *Modelwork: The Material Culture of Making and Knowing*, ed. by Martin Brückner, Sandy Isenstadt, and Sarah Wasserman, Minneapolis: University of Minnesota Press, 2021, 227–254.
44 See Johanna Drucker, *Visualization and Interpretation: Humanistic Approaches to Display*, Cambridge, Massachusetts: MIT Press, 2020.
45 See *C21 Editions*, James O'Sullivan [et al.], University College Cork, University of Sheffield, University of Glasgow, 2021–2024, <https://www.c21editions.org/> (accessed 7 January 2023).
46 See Andreas Oberhoff, *Digitale Editionen im Spannungsfeld des Medienwechsels: Analysen und Lösungsstrategien aus Sicht der Informatik,* Bielefeld: transcript, 2021.
47 See Tiziana Mancinelli and Elena Pierazzo, *Che cos'è un'edizione scientifica digitale*, Rome: Carocci, 2020.
48 See Anna Cappellotto, "From Codex to Apps: The Medieval Manuscript in the Age of its Digital Reproduction," in: *Umanistica digitale* 4/9 (2020), 1–18, online: <https://doi.org/10.6092/issn.2532-8816/11459>.

references to literature when I excised the digital humanities primer and hope that all that should remain remains.

5. ON THE MATTER OF LANGUAGE

As a last point, I want to close this preface with some remarks on the matter of language. This matter must not be underestimated. Not only does it play a pivotal – selective – role in research, it also plays a pivotal role in communicating the findings of that research. Sometimes, the matter of language can be ignored because a translation poses little challenge where the substance of a paper or book is concerned. This book is not one of those cases. Perhaps to its detriment, it is not a translation at all but a hybrid, stuck halfway between thought and articulation, German and English.

English is often said to be the *lingua franca* of the digital humanities.[49] While the same is true for other sciences, it is not necessarily true or at least did not necessarily use to be true for disciplines in the humanities that tend towards national traditions, discourses, and methodological trends.[50] The complication that the digital humanities introduce is not

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49 Cf. Paul Joseph Spence and Renata Brandao, "Towards Language Sensitivity and Diversity in the Digital Humanities," in: *Digital Studies/Le champ numérique* 11/1 (2021), online: <https://doi.org/10.16995/dscn.8098>. See also Quinn Dombrowski and Patrick J. Burns, "Language is not a Default Setting: Countering Digital Humanities' English Problem," in: *Debates in Digital Humanities 2023*, ed. by Matthew K. Gold and Lauren F. Klein, Minneapolis: University of Minnesota Press, 2023, 295–304.

50 One might be tempted to link the establishment and consolidation of the 'modern' humanities in the 18th and 19th century to the concurrent rise of nationalism. Interestingly, in his 1909 biography of chemist Justus von Liebig, Jakob Volhard writes: "In the period after the wars of liberation, intellectual life in Germany was extraordinarily active in general; in philosophy, linguistic research, history, jurisprudence, in short, in all the so-called humanities, there was the liveliest movement at work. Let me just name Savigny, the Grimm brothers, Boeckh, Lachmann, Bopp, Diez, Ritter, Niebuhr, the Humboldts, Eichhorn, Kreuzer, Gottfr. Hermann. Treitschke's description of the intellectual movement in the first quarter of the nineteenth century reads: 'The decade after Napoleon's fall was a time of prosperity for the sciences and the arts in the whole world. The peoples, who had just fought each other with arms, exchanged the fruits of their intellectual labour in a beautiful competition; ... and in this peaceful contest Germany stood head and shoulders above all.' Only the exact sciences had remained unmoved by this stirring of the minds." (Jakob Volhard, *Justus von Liebig* (vol. 1), Leipzig: Johann Ambrosius Barth, 1909, 1; original: "In der Zeit nach den Befreiungskriegen war das geistige Leben

only the question of how interdisciplinary divides can be bridged; arguably, international and interlingual divides disturb conversation just as much, if not more. To prioritize accessibility, this book was written in English which, in my case, means that it was written in a non-native language. This presents certain difficulties that cannot be offset by paying closer attention to issues of terminology, especially when it comes to epistemology and philosophy of science.[51] Some of these differences go to the heart of what we understand science to be and encompass. On a

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in Deutschland im allgemeinen ein außerordentlich reges; in Philosophie, Sprachforschung, Geschichte, Jurisprudenz, kurz in allen sogenannten Geisteswissenschaften betätigte sich die lebhafteste Bewegung. Ich erinnere nur an Savigny, die Gebrüder Grimm, Boeckh, Lachmann, Bopp, Diez, Ritter, Niebuhr, die Humboldt, Eichhorn, Kreuzer, Gottfr. Hermann. In Treitschkes Schilderung der geistigen Bewegung im ersten Viertel des neunzehnten Jahrhunderts heißt es: 'Das Jahrzehnt nach Napoleons Sturz wurde für den ganzen Weltteil eine Blütezeit der Wissenschaften und der Künste. Die Völker, die soeben noch mit den Waffen aufeinandergeschlagen, tauschten in schönem Wetteifer die Früchte ihres geistigen Schaffens aus; … und in diesem friedlichen Wettkampfe stand Deutschland allen voran.' Nur die exakten Wissenschaften waren von dieser Bewegung der Geister unberührt geblieben."). That Treitschke should have written such a characterization can hardly surprise, given his nationalistic (and famously antisemitic) outlook which was at the root of the *Berliner Antisemitismusstreit* where Theodor Mommsen strongly opposed such sentiments. On the topic of the humanities and nationalism, see more generally David R. Shumway, "Nationalist Knowledges: The Humanities and Nationality," in: *Poetics Today* 19/3 (1998), 357–373. Michiel Leezenberg has proposed that the "early modern humanities may have shaped modern nationalism" (Michiel Leezenberg, "How Comparative Should a Comparative History of the Humanities Be? The Case of the Dutch Spinoza Circle," in: *The Making of the Humanities: Early Modern Europe* (The Making of the Humanities; vol. 1), ed. by Rens Bod, Jaap Maat and Thijs Weststeijn, Amsterdam: Amsterdam University Press, 2010, 17–38, here 26). Natural sciences, as much as scientists like Fritz Haber weaponized their knowledge and research for nationalist purposes, arguably promoted a more global approach to 'problem-solving' and the debate of research questions in the 20th century, as evidenced by the Solvay conferences organized by the International Institutes for Physics and Chemistry, even if disrupted by wars; see <http://www.solvayinstitutes.be/html/solvayconference.html> (accessed 7 January 2023) and Niels Bohr's recollection of the impact these conferences had on the history of science, Niels Bohr, "The Solvay Meetings and the Development of Quantum Mechanics," in: *La théorie quantique des champs: Douzième Conseil de physique, tenu à l'Université libre de Bruxelles du 9 au 14 octobre 1961*, New York: Interscience Publishers, 1962, 13–36, online: <http://ladigitheque.ulb.ac.be/items/show/1078> (accessed 7 January 2023). See more proceedings and information at *The Solvay Science Project*, <http://ladigitheque.ulb.ac.be/> (accessed 7 January 2023).

51 In the case of philosophy, Barry Smith has noted some of the difficulties of translation although he argues against a widespread 'thesis of untranslatability' with regard to German philosophers, cf. Barry Smith, "German Philosophy: Language and Style," in: *Topoi* 10 (1991), 155–161. He also speaks of the "dadaistic posturings of Derrida *et al.*"

very basic level, the humanities are not regarded as sciences in English,[52] as was also pointed out in the first issue of the journal *History of Humanities*:

> Choosing English as the lingua franca entails many risks [...]. In modern English, for one, the division between the humanities and the sciences is emphasized by the terminology itself. Yet in many other languages there is a single term, such as *Wissenschaft* in German, *scienza* in Italian, or *nauka* in Russian, that denotes the study of both the natural and the human world.[53]

Neither are the terms 'humanities' and *Geisteswissenschaften* equivalent.[54] This topic is awaiting discussion in the context of the digital humanities. What I can do within the confines of this book is clarify the following: To the best of my abilities, I avoid speaking of 'science' in the sense of *Wissenschaft* or 'scientific' in the sense of *wissenschaftlich* and instead opt for 'scholarly' for the latter whenever suitable, e.g. in discussions of the humanities. I take no stance whatsoever on the use of

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(ibid., 161) which could very well be its own topic of interdisciplinary discussion about academic writing.

52 What this means in practice is that when there are arguments about whether the *Geisteswissenschaften* ('humanities') are *Wissenschaften* ('sciences') or not, in a German context the starting assumption is that they are and someone will make an argument *that they are not* (see Hans Ulrich Gumbrecht, "Die ewige Krise der Geisteswissenschaften – und wo ist ein Ende in Sicht?" in: *Beiträge zur Hochschulpolitik* 4 (2015), 3–28), whereas in an Anglophone context, the situation is reversed, with the starting assumption being that they are not and someone making an argument *that they are* (generally speaking, it appears as though this argument is not made very often; and if it is made, it would seem that it tends to be made by non-native speakers who would like to popularize a continental European understanding of *Wissenschaft* or *scientia*; see, for example, Jens Høyrup, *Human Sciences: Reappraising the Humanities Through History and Philosophy*, Albany: State University of New York Press, 2000).

53 Rens Bod [et al.], "A New Field: History of Humanities," in: *History of Humanities* 1/1 (2016), 1–8, here 4, online: <https://doi.org/10.1086/685056>.

54 The translators of Hans-Georg Gadamer's *Wahrheit und Methode* (1960) also noted the difficulties in translating *Wissenschaft* and *Geisteswissenschaften*, cf. Hans-Georg Gadamer, *Truth and Method*, transl. rev. by Joel Weinsheimer and Donald G. Marshall, London [et al.]: Bloomsbury Academic, 2013 – for the remarks on the translation, see ibid., 'Translator's Preface,' xvii–xviii.

phrases like 'the scientific method'[55] in English and avoid them. I also take no stance on the *Wissenschaftlichkeit* ('scientificity') of this book, beyond its embeddedness in the conversation carried out in the research literature it cites. Whenever I feel it necessary, I use German terms with English explanations or approximations; sometimes, the meaning of a term must be inferred from its contextual use. I had never written a single academic text in English before writing this thesis/book and I should add, for the sake of transparency, that it was never proofread by a native English speaker either. So it goes. We could discuss style, German, English, different academic traditions, precision, readability, 'insofar', passive constructions, sentences that run for half a page – you get the idea. That would be a paper of its own. (One that I may or may not be inclined to write.)

Some remarks on American English versus British English: I use the Oxford comma except in cases where I feel like it would confuse readers and the same goes for a comma between clauses (e.g. before a conjunction – many Germans tend to think that you would never use a comma in those cases and they are obviously wrong, but I took the liberty of deciding this situationally, dependent on the intelligibility of a given sentence). Abbreviations such as 'e.g.' or 'i.e.' are not followed by a comma, as per British custom. Spelling adheres to British English in most cases, including the Oxford spelling of -ize instead of -ise (but -lyse instead of -lyze) which most readers erroneously take to be American. I have generally followed the American English custom of putting periods and commas inside quotation marks when the quotation mark is followed by a footnote number immediately after (in order to resolve the awkwardness of punctuation), but I have not done the same with quotation marks that are not followed by a footnote number, e.g. single quotation marks. These are merely some examples that come to my mind as I contemplate whether I am writing the textual equivalent of a Mid-Atlantic accent. Please forgive any and all idiosyncrasies; most of them were conscious decisions that would be rather dull to detail any further.

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55 That this is a phrase with a specific use can be seen in publications like Henry H. Bauer, *Scientific Literacy and the Myth of the Scientific Method*, Champaign, Illinois: University of Illinois Press, 1992.

Last, a note on citation practices: In cases where I have translated German quotes into English, the German original will be provided in the footnote. Sources are cited in full when first cited and with a short title thereafter unless clarification is needed. Online resources that come with a DOI or another type of persistent identifier are stated as is. If they do not provide a stable reference, I state the URL together with an access date. In addition, I have archived those resources on the given access date in the Internet Archive, where possible. I have not cited the archived versions directly in order to maintain intelligibility, but they can be found using the Wayback Machine <https://archive.org/> in combination with the access date. Page numbers of articles that are sourced online but only made accessible in individually generated PDFs (e.g. in an issue where every article starts with page 1) are stated in square brackets.

That is all. I hope you enjoy this book. If you have any questions, please do not contact me for a year or so. I'm gone fishin'.



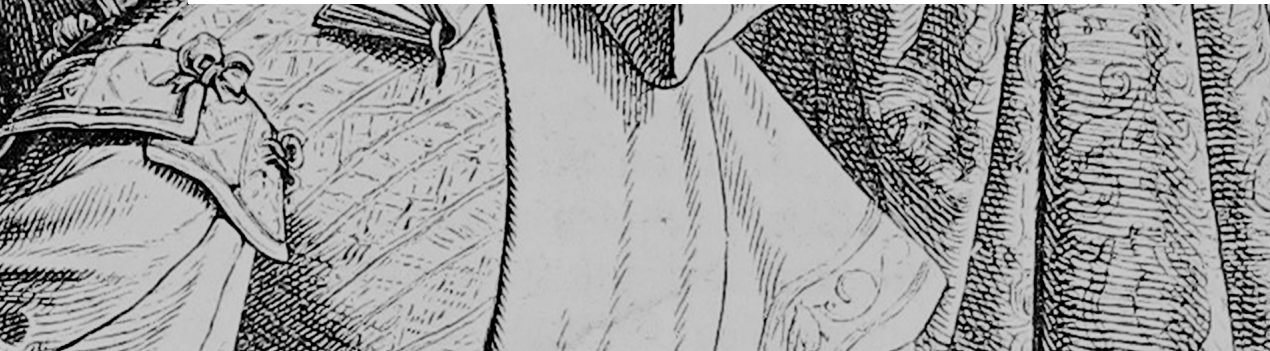
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1 introduction

Before we can consider digital scholarly editions, we must consider the interdisciplinary framework in which they are discussed. This framework emerges from many different traditions but does not, as one would expect, cover all questions that can arise when we want to understand *digital* scholarly editions specifically. For that, we must thread philology, art history, the philosophy of the (digital) humanities, and the ways in which technology and scholarship interact and have interacted in setting up the environment for scholarly editing. This includes issues of reproduction and the topic of facsimile editions, the history and practice of which is largely unexplored in editorial theory, as well as an examination of binary views on 'original' vs. 'copy'. The discussion is drawn in circles around and towards modelling, which will be the focus of the following methodological chapter.



'The surrogates mean everything in life, and are, in fact, the last essence of wisdom.'

'You must be doing very well for yourself, dear Sander,' the Prince replied, 'to feel comfortable confessing such outrageous things in public.'

Theodor Fontane, *Schach von Wuthenow: Erzählung aus der Zeit des Regiments Gensdarmes*, Leipzig: Wilhelm Friedrich, 1883, 90, original: "‚Die Surrogate bedeuten überhaupt alles im Leben, und sind recht eigentlich die letzte Weisheitsessenz.' ‚Es muss sehr gut mit Ihnen stehn, lieber Sander,' entgegnete der Prinz, ‚daß Sie sich zu solchen Ungeheuerlichkeiten offen bekennen können.'"

introduction
of interdisciplinary considerations

Let us begin with a conflict. Conflicts are, after all, the contentious siblings of arguments; and any scholarly book should have those. In this case, conflict is meant to be taken quite seriously as the descriptor of a heated debate. A quarrel, a fight. Such was the situation in 1930 when art historian Erwin Panofsky – still in Hamburg, not yet on his way to Princeton[1] – drafted a "Solomonic response"[2] to an issue that had been

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1 Erwin Panofsky (1892–1968), one of the most eminent art historians of the 20th century, emigrated from Germany to the United States in 1933 after his contract had been terminated because he was Jewish. For more biographical information, see Dieter Wuttke, "Erwin Panofsky (1892–1968)," in: *The Routledge Companion to Medieval Iconography*, ed. by Colum Hourihane, London / New York: Routledge, 2017, 105–122. Henri van de Waal, a fellow art historian and the creator of *Iconclass*, furthermore wrote an obituary that is well worth reading, see Henri van de Waal, "In Memoriam Erwin Panofsky, March 30 1892 – March 14 1968," in: *Mededelingen der Koninklijke Nederlandse Akademie van Wetenschappen, Afd. Letterkunde* 35/6 (1972), 227–237, online: <http://www.dwc.knaw.nl/DL/publications/PU00009846.pdf> (accessed 12 January 2023) [originally spoken at a gathering on 14 April 1968, printed after van de Waal's own passing].

2 Remark by the editors of the volume in which the article was last reprinted, cf. Erwin Panofsky, *Deutschsprachige Aufsätze* (Studien aus dem Warburg-Haus; vol. 1,2), ed. by Karen Michels and Martin Warnke, Berlin: Akademie-Verlag, 1998, 1090 (original: "salomonische Antwort"). For Panofsky's article, see Erwin Panofsky, "Original und Faksimilereproduktion," in: id., *Deutschsprachige Aufsätze* (Studien aus dem Warburg-Haus; vol. 1,2), ed. by Karen Michels and Martin Warnke, Berlin: Akademie-Verlag, 1998, 1078–1089 [originally published in *Der Kreis* 7 (1930), 3–16; rediscovered and reproduced in *Idea: Jahrbuch der Hamburger Kunsthalle* 5 (1986), 111–124]. A translation of the article is available as Erwin Panofsky, "Original and Facsimile Reproduction," transl. by Timothy Grundy, in: *RES: Anthropology and Aesthetics* 57–58 (2010), 330–338 (this translation will not be used here due to a different understanding as to how to convey the 'tone' of the original).

plaguing the German art world for close to a year, staged in the pages of the journal *Der Kreis*: the so-called *Hamburger Faksimile-Streit* ('facsimile dispute of Hamburg').[3] It had begun with a bellicose article by museum director Max Sauerlandt in March 1929, criticizing a galvanoplastic reproduction of the *Bamberger Reiter* ('Bamberg Horseman', a statue in the cathedral of Bamberg that had by then already taken on a mythical status of national import).[4] The discussion triggered by his article soon devolved into a more fundamental debate that primarily saw Carl Georg Heise, at the time director of the *Museum für Kunst und Kulturgeschichte* in Lübeck and responsible for a controversial commission of plaster replicas of medieval statues, on the receiving end of the abuse.[5] Another target of scorn was Alexander Dorner, director of a museum in Hanover, who had curated an exhibition that presented 'original' and 'facsimile' next to each other and encouraged visitors to wonder which was which.[6] In the months that followed, many more figures became involved until Erwin Panofsky, professor at the university of Hamburg, was invited to

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3 In Anglophone literature sometimes referred to as 'facsimile debate' or 'reproduction debate'. For general literature on this, see Anika Reineke, "Authentizität in der Weimarer Republik: Max Sauerlandt und der Hamburger Faksimile-Streit," in: *Authentizität und Material: Konstellationen in der Kunst seit 1900* (Outlines; vol. 11), ed. by Regula Krähenbühl and Roger Fayet, Heidelberg: arthistoricum.net, 2019, 118–131 (for a full bibliography on the topic, Reineke refers to her *Magister* thesis from 2012 at the University of Hamburg, cf. ibid., 129, fn. 18), and Michael Diers, "Kunst und Reproduktion: Der Hamburger Faksimile-Streit. Zum Wiederabdruck eines unbekannt gebliebenen Panofsky-Aufsatzes von 1930," in: *Idea: Jahrbuch der Hamburger Kunsthalle* 5 (1986), 125–137.

4 On the topic of which see Berthold Hinz, "Der 'Bamberger Reiter'," in: *Das Kunstwerk zwischen Wissenschaft und Weltanschauung*, ed. by Martin Warnke, Gütersloh: Bertelsmann, 1970, 26–47, and the translation Berthold Hinz, "The Bamberg Horseman," transl. by Jonathan Blower and Johanna Wild, in: *Art in Translation* 6/2 (2014), 157–179, online: <https://doi.org/10.2752/175613114X13998876655130>. See furthermore William C. McDonald, "Concerning the Use and Abuse of a Medieval Statue in Germany from 1920–1940: The Case of the Bamberger Reiter," in: *Perspicuitas: Internet-Periodicum für mediävistische Sprach-, Literatur- und Kulturwissenschaft* (2010), [1–21], online: <https://www.uni-due.de/imperia/md/content/perspicuitas/mcdonald.pdf> (accessed 27 September 2023).

5 Cf. Diers 1986, 126f. and Reineke 2019, 120-122.

6 Cf. Reineke 2019, 122. On Alexander Dorner's role in the *Faksimile-Streit*, see also Rebecca Uchill, "Original und Reproduktion: Alexander Dorner and the (Re)production of Art Experience," in: *Future Interior: Journal of Historic Preservation, History, Theory, and Criticism* 12/2 (2015), 13–37.

make a contribution.[7] His response was so long that it had to be printed separately, although not in an official special issue, which was one of the reasons why it did not enter the canon of Panofsky's work until a copy of the article was unearthed from the private collection of one of his students in the 1980s.[8]

Even today, this historical episode is not particularly well-known – certainly not as well-known as the famous contemporaneous article *Das Kunstwerk im Zeitalter seiner technischen Reproduzierbarkeit* ('The Work of Art in the Age of Mechanical Reproduction') by Walter Benjamin[9] which we find referenced, for example, in Mateusz Fafinski's "Facsimile Narratives" (2022)[10] or Mats Dahlström's elaboration on "Copies and Facsimile" (2019)[11] where facsimilization in digital scholarly editing is the focus of discussion; perhaps for the first time, at least to that extent. We will, of course, turn our attention towards the concept of 'facsimiles' in digital scholarly editing eventually. For the moment, however, let us stay with Panofsky's essay and why it is important in

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7 For the bibliography of the other contributions, see Diers 1986, 134, fn. 5.

8 Cf. ibid., 125. Diers stresses that the essay had been all but forgotten in the meantime but as evidenced by an article that was pointed out to him after he had finished his own manuscript – Ulrich Weisner, "Original und Reproduktion," in: *Westfalen: Hefte für Geschichte, Kunst und Volkskunde* 55/1–2 (1977), 205–219, cf. Diers 1986, 137 – and as furthermore evidenced by a mention of Panofsky's essay in an article that Diers would not seem to have been aware of nor been made aware of – Frank Weitenkampf, "What is a Facsimile?" in: *The Papers of the Bibliographical Society of America* 37/2 (1943), 114–130, here 128f. –, it may have resonated with more scholars and librarians than one might think; or at least with more than none. Of course, such a resonance would have been dependent on having access to it, perhaps through personal acquaintance.

9 See Walter Benjamin, *Das Kunstwerk im Zeitalter seiner technischen Reproduzierbarkeit* (Werke und Nachlaß / Walter Benjamin; vol. 16), ed. by Burkhardt Lindner, Berlin: Suhrkamp, 2013 [collection of five versions; the essay was written in 1935 and originally published in a redacted French version as "L'œuvre d'art à l'époque de sa reproduction mécanisée," transl. by Pierre Klossowski, in: *Zeitschrift für Sozialforschung* 5/1 (1936), 40–68]. For an English translation, see Walter Benjamin, "The Work of Art in the Age of Mechanical Reproduction," transl. by Harry Zohn, in: Walter Benjamin, *Illuminations: Essays and Reflections*, ed. by Hannah Arendt, London: Penguin Random House, 2015, 211–244 [reprint; originally published in New York: Harcourt, Brace & World, 1968].

10 Cf. Fafinski 2022, 98.

11 Cf. Mats Dahlström, "Copies and Facsimiles," in: *International Journal of Digital Humanities* 1 (2019), 195–208, here 197, online: <https://doi.org/10.1007/s42803-019-00017-5>.

the present context, more so than Benjamin's article which arose at a similar time and borrows from the language of the other participants in the *Hamburger Faksimile-Streit,* such as when Benjamin speaks of the 'aura' of the original.[12]

A.
'ORIGINAL' VERSUS 'COPY'

In comparison, Panofsky opts for an earthier approach. He indicates the issue at the heart of the debate by opening his letter to the editors with the quote from Fontane translated at the beginning of this chapter: In his view, *Originalfanatiker* ('fanatics of the original') and *Faksimilisten* ('proponents of facsimiles') both erroneously suppose that a facsimile is intended to replace the original, to be a surrogate, to *deceive* an observer, and consequently much of their discussion revolves around the question whether such a reproduction is technically possible – but, asks Panofsky, "since when is the subjective intention of the creator or the subjective effect on the (not yet trained) observer proof of the objective matter at hand?"[13]

It is, he submits, misguided to solely regard the issue of facsimile reproduction as a moral or aesthetic one without taking practical aspects into account. Unlike his interlocutors, Panofsky is not interested in discerning whether it is even so much as *seemly* to reproduce art; he is interested in the quality and design of the reproduction in relation to the purposes it ought to serve; and these purposes are, in his view, never

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12 Diers speculates that Benjamin might have been aware of the *Hamburger Faksimile-Streit* but he also admits that the similarities in language and other aspects might be coincidental; cf. Diers 1986, 129–131. György Markus who discusses Benjamin in this regard at more length states that "[i]t cannot [...] be convincingly proven that he knew about it, though if not, this certainly would be a rather strange case of coincidence" (György Markus, "Walter Benjamin and the German 'Reproduction Debate'," in: *Moderne begreifen: Zur Paradoxie eines sozio-ästhetischen Deutungsmusters*, ed. by Christine Magerski, Robert Savage and Christiane Weller, Wiesbaden: Deutscher Universitäts-Verlag, 2007, 351–364, here 352f.). Cf. also Uchill 2015, 26f.

13 Panofsky 1930/1998, 1079, original: "Allein seit wann beweist die subjektive Absicht des Erzeugers und die ebenso subjektive Wirkung auf den (noch untrainierten) Beschauer auch nur das Geringste für den objektiven Sachverhalt?"

identical to the purposes of the 'original' – meaning that the experience of either will never be the same since it is not the point of a facsimile to have them be the same.[14] He underlines his arguments with a wealth of examples, some of which are grounded in the specific context of the then-ongoing debate, such as when he emphasizes the benefits of listening to a gramophone record versus the experience of a live performance, proposing that it is not necessary to favour one over the other since they are not in direct competition.[15] He also points out that accusations pertaining to the mechanical nature of reproduction, especially the spectre of a 'machine god' raised by art historian Kurt Karl Eberlein,[16] neglect fundamental technical differences when they equate musical records with reproductions of pictorial artwork; the latter involving, in Panofsky's opinion, rather *too much* human intervention in the stages of production, e.g. in the process of colour selection, leading to uneven results which he hardly thinks desirable.[17]

Leaving such details aside, Panofsky arguably makes his most interesting observation when he references a facsimile of the *Schwarzes Gebetbuch* ('Black Prayer Book'), held by the Austrian National Library in Vienna.[18] This project causes him to wonder about the purposes that

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14 Cf. ibid.
15 Cf. Panofsky 1930/1998, 1079–1081.
16 Cf. ibid., 1082. For the relevant passage in Eberlein's article, cf. Kurt Karl Eberlein, "Zur Frage: ‚Original oder Faksimilereproduktion?'" in: *Der Kreis* 6/11 (1929), 650–653, here 651, online: <https://doi.org/10.11588/diglit.56522#0748>. We may take note of the fact that Eberlein later became a fervent supporter of the NS regime and that his rhetoric in this matter already mirrors a specific kind of language rooted in an idealization of the 'purity' of the original which is alleged to be representative of a certain superiority of a 'cultured civilization', under threat by 'the machine'. On Eberlein's argumentation in this debate, cf. also Uchill 2015, 23f., 27, and 34, fn. 24 for reference to an English translation of his contribution; for biographical information on Eberlein, see Peter Betthausen [et al.], 'Eberlein, Kurt Karl,' in: *Metzler Kunsthistoriker Lexikon*, Stuttgart: J.B. Metzler, 2007, 71–86, online: <https://doi.org/10.1007/978-3-476-05262-9_5>.
17 Cf. Panofsky 1930/1998, 1081–1083.
18 This must be referring to the Codex Vindobonensis 1856 at the ÖNB, a 15th century manuscript also known as *Schwarzes Gebetbuch des Galeazzo Maria Sforza* ('The Black Hours of Galeazzo Maria Sforza'). It has been reproduced in several facsimile editions over the years; the one that Panofsky must be referring to was edited by Ottokar Smital and published in two volumes in Vienna by the Österreichische Staatsdruckerei in 1930; the miniatures were reproduced with the *Lichtdruckverfahren* (a photolithographical printing process). As a librarian and head of the manuscript collection, Smital was highly

facsimiles could serve, a documentary value being one of them: "Some art historians," he states, "would be delighted if the burnt 'Heures de Turin' had at least survived in the form of facsimile prints – even if they knew that those facsimile prints would be rendered useless in a few hundred years of time."[19] In a footnote, he elaborates further that "the facsimile reproduction is not supposed to edify or educate but [...] to assist the 'poor student' as well as the rich *Erlebemann* [...] in their fight against space and time"[20] – meaning that it ought to be seen pragmatically as a way to improve the accessibility of materials; and he specifically adds that "the existing originals are not accessible to everyone, especially not to those who 'need' them – whether for 'academic' or humane reasons."[21] Thus, the merit of the facsimile reproduction lies in that "which it can provide (and will provide more completely once it has been thoroughly

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interested in facsimile reproductions and responsible for other facsimile publications such as of the *Codex Vindobonensis Mexicanus 1* (1929) and the *Livre du Cuerd'Amours Espris* by René d'Anjou (1926), cf. Andreas Fingernagel and Anna Zschokke, 'Smital, Ottokar,' in: *Österreichisches Biographisches Lexikon 1815–1950* (vol. 12), ed. by Eva Obermayer-Marnach, Graz [et al.]: Böhlau, 2005, 372, online: <https://doi.org/10.1553/0x00284b68>.

19 Panofsky 1930/1998, 1087, original: "[...] und mancher Kunsthistoriker wäre froh, wenn die verbrannten ‚Heures de Turin' wenigstens in Faksimiledrucken auf uns gekommen wären – auch wenn er wüßte, daß diese Faksimiledrucke in ein paar Jahrhunderten nicht mehr zu gebrauchen sein würden." Here he argues against Sauerlandt's assertion that the different materiality of the original and facsimile copies means that they would develop apart with age – to which Panofsky replies that one could simply make a new facsimile if this gap grew too wide and that the facsimile could even have "documentary value" (ibid., 1086) if it were the original that deteriorated significantly and therefore ceased to resemble its 'original' state (cf. Panofsky 1930/1998, 1086).

20 Ibid., 1087, fn. 5, original: "Die Faksimilereproduktion soll weder erheben noch erziehen, sondern sie soll [...] sowohl dem ‚armen Studenten' als dem reichen Erlebemann [...] bei dem [...] Kampf gegen Raum und Zeit [...] Hilfe gewähren." I did not translate the word *Erlebemann* since it is a sophisticated wordplay on *Lebemann* ('bon vivant') to denote the critics in the facsimile debate who intently focus on the *Erleben* ('experience') of the original – this is made obvious by the qualification of the term that Panofsky supplies in parentheses, namely that he means the rich 'experiencing' man "provided he does not belong to those who have an 'insurmountable aversion' to everything 'reproductive'" (Panofsky 1930/1998, 1087, fn. 5, original: "vorausgesetzt, daß er nicht zu denen gehört, die gegen das ‚Reproduktive' jene ‚unüberwindliche Abneigung' haben").

21 Ibid., 1087, fn. 5, original: "[...] aber auch die existierenden Originale sind nicht jedem erreichbar, sind gerade denen oft nicht erreichbar, die sie – ob ‚wissenschaftlich' oder menschlich – brauchen."

mechanized): not an object of deception but a foundation for an aesthetic transformation."[22]

Although it is not the primary objective of this book to investigate facsimile editions, Panofsky's thoughts on the matter are interesting for several reasons: (1) they concern the issue of a *reproducibility* of visual works, (2) they highlight that frameworks of technical feasibility must not be confused with statements on the fundamental *nature* of things,[23] (3) they address an anxiety about a perceived dichotomy between 'man' and 'machine'. This sentiment is, of course, not unique to the *Hamburger Faksimile-Streit* and might even be characterized as penetrating time, disciplines, and languages: Take, for example, philologist and medievalist Stephen G. Nichols. In his book *From Parchment to Cyberspace: Medieval Literature in the Digital Age* (2016), he observes that there was or rather is a "fear that the perfectly replicated image will somehow replace the 'real' artifact."[24] Describing the reaction to digitized medieval manuscripts specifically that he experienced in personal encounters, he surmises that "the negative energy taps into an age-old antagonism between 'original' and 'imitation' or 'copy'."[25]

What may, at first glance, only seem like a historical episode then, reveals itself to be still – or perhaps especially so – relevant in an age where the discussion has shifted to a *mass* reproduction of cultural heritage objects and, consequently, even further: namely to the question what *to do* with those reproductions. What purpose do they serve? Preservation, accessibility? And what *other types* of reproduction are there, aside from imaging 'originals'?

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22 Panofsky 1930/1998, 1087, fn. 5, original: "[Die Faksimilereproduktion soll das leisten], was sie eben leisten kann (und in vollkommenerer Weise leisten wird, wenn sie durchaus mechanisiert sein wird): nicht Gegenstand einer Täuschung zu sein, sondern Grundlage einer ästhetischen Transformation."

23 He specifically warns against formulating "generally binding sentences about 'the' nature of 'the' artwork" (ibid., 1086, original: "allgemeinverbindliche Sätze über 'das' Wesen 'des' Kunstwerks") and recommends rather a "systemic and, in particular, historical" (Panofsky 1930/1998, 1086, original: "systematisch und vor allem historisch") differentiation, cf. ibid.

24 Stephen G. Nichols, *From Parchment to Cyberspace: Medieval Literature in the Digital Age*, New York [et al.]: Peter Lang, 2016, 45.

25 Ibid.

In another footnote in Panofsky's article, we find a hint at what would seem to be a core issue to consider in the discussion of digital scholarly editions beyond text:

> Logically impermissible (and therefore neither evidence pro nor contra) is however the comparison, already rejected by Eberlein, between the facsimile reproduction and the printed edition of Goethe's poems or Mozart's quartets. Here, we do not have a recording or reproduction of the artistic achievement itself but merely a recording and reproduction of conventional signs that relate to artistic achievement as the formula H_2O does to actual water.[26]

With this little footnote, Panofsky provides us with a preview of something that Nelson Goodman would later turn into his main theory in the 1960s; something which Gérard Genette has termed "the Goodmanian theory of the allographic regime"[27] – a theory about the reproducibility of (art-)works that focuses on the "unlimited reproduction of the instances of manifestation of an ideal, unique object of immanence,"[28] meaning that literary, textual works or works that otherwise have a notation system are deemed allographic because they are 'copyable' whereas paintings and sculptures, in that view, cannot be replicated, only forged or imitated;[29] a stance that Panofsky, one imagines, might have found rather

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26 Panofsky 1930/1998, 1081f., fn. 2, original: "Logisch unzulässig (und daher weder pro noch contra beweiskräftig) ist dagegen der schon von Eberlein zurückgewiesene Vergleich der Faksimilereproduktion mit einer Druckausgabe der Goethischen Gedichte oder der Mozartischen Quartette. Hier handelt es sich ja gar nicht um ein Festhalten und Vervielfältigen der künstlerischen Leistung selbst, sondern nur um ein Festhalten und Vervielfältigen konventioneller Zeichen, die sich zur künstlerischen Leistung verhalten wie die Formel H_2O zu wirklichem Wasser." (The original contains the increased letter tracking for emphasis.)

27 Gérard Genette, *The Work of Art: Immanence and Transcendence*, transl. by G. M. Goshgarian, Ithaca / London: Cornell University Press, 1997, 71 [originally published as *L'œuvre de l'art: Immanence et transcendence*, Paris: Éditions du Seuil, 1994].

28 Ibid., 175.

29 Goodman theorized that autographic artworks cannot be reproduced without becoming imitations or forgeries (= paintings and sculptures) whereas allographic artworks can be reproduced because they are based on a notation system (= literature and music), enabling a "sameness of spelling" (Nelson Goodman, *Languages of Art: An Approach to a Theory of Symbols*, Indianapolis: Hackett, ^{2}1976 [originally published in 1968], 112–122,

simplistic, despite of or rather because of his *avant la lettre* awareness of the finer points in this debate. We will have to take Goodman's semiotic work definition into account since references to it are frequent in literature that tentatively seeks to move away from or beyond questions of notational textual reproduction in scholarly editing contexts, even when such discussions, as is usually the case, are not even concerned with matters of pictorial transmission variance[30] – precisely because Goodman's theory denies that such a variance can even exist within the frame of a *picture work* and its *witnesses*. To Goodman, there is only one witness of a picture work: The physical object of 'the original'.[31]

Before we examine this question more closely, we would do well to establish the general framework within which these topics are of any concern to us to begin with. That framework is one of discipline, of methodology, and of objects of study. It reaches into issues of representation, of the 'real' and the 'imagined' or, indeed, 'imaged', into the anxieties illustrated by the *Hamburger Faksimile-Streit* at a different

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here 115). Regardless of whether one agrees with this semiotic distinction, it is quite another question whether this distinction is useful in defining the distinction between a text and a work, for example, a distinction that Goodman himself seemed to make but never used consistently, cf. ibid. See for a further discussion Johnny Kondrup, "Text und Werk – zwei Begriffe auf dem Prüfstand," in: *editio* 27/1 (2013), 1–14, esp. 10f., online: <https://doi.org/10.1515/editio-2013-002>.

30 Such as in Dahlström 2019, 205–207, although Dahlström recognizes other issues with Goodman's theory, such as when he asks whether 'painting by numbers' might not be a form of "allographic painting" (ibid., 207).

31 As indicated by the terminology of 'forgery', Goodman examines these questions under a theme of 'authenticity' and "genuineness" (Goodman ²1976, 119). He does not make any claims about the aesthetic qualities of original versus forgery (cf. ibid.) but neither are we, for the purposes of the inquiry in this book, interested in the aesthetic qualities of different witnesses or versions of a work, suggesting that that may not be the only objection one might raise in response to Goodman's theory. Before developing any arguments to that effect, we should note that Goodman's theory has been criticized before, even if not with lasting influence or much relevance in the present context, with the exception, perhaps, of Ralls; see Anthony Ralls, "The Uniqueness and Reproducibility of a Work of Art: A Critique of Goodman's Theory," in: *The Philosophical Quarterly* 22/86 (1972), 1–18, online: <https://doi.org/10.2307/2218587>. See furthermore David Topper, "On the Fidelity of Pictures: A Critique of Goodman's Disjunction of Perspective and Realism," in: *Philosophia* 14 (1984), 187–98, online: <https://doi.org/10.1007/BF02378969>, and W. J. T. Mitchell, "Realism, Irrealism, and Ideology: A Critique of Nelson Goodman," in: *The Journal of Aesthetic Education* 25/1 (1991), 23–35, online: <https://doi.org/10.2307/3333088>.

time, with different technologies at the disposal of scholars and curators; we might even say, under a different sky, with a different future looming on the horizon. In the evolving conversation, we can find one similarity, however: and that is the narrative of conflict.

B.
THE PHILOSOPHY OF AS-IF

If we continue with that theme, it is not because we want to speak it into existence but because it has been spoken into existence.[32] 'Revolution', 'disruption', 'tension'[33] – one might be forgiven for thinking that there was a conflict at the heart of the digital humanities, given such language. This conflict (if it exists at all outside of its discursive invocation) is not a conflict between theory and practice, as clashes within the field might have indicated in the past.[34] The conflict, or series of conflicts,

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32 For the types of conflicts surrounding the digital humanities, we need not look further than the debate about virtue and value of the digital humanities in US-American academia, exemplified by two opposing articles in *The Chronicle of Higher Education* that were featured as part of what the editors called 'The Digital Humanities War' – see Ted Underwood, "Dear Humanists: Fear Not the Digital Revolution," in: *The Chronicle Review* (27 March 2019), online: <https://www.chronicle.com/article/Dear-Humanists-Fear-Not-the/245987> (accessed 12 January 2023) and Nan Z. Da, "The Digital Humanities Debacle," in: *The Chronicle Review* (27 March 2019), online: <https://www.chronicle.com/article/The-Digital-Humanities-Debacle/245986> (accessed 12 January 2023).

33 Cf. Underwood 2019; Dorothy Kim and Jesse Stommel (Eds.), *Disrupting the Digital Humanities*, Santa Barbara: punctum, 2018; and Claire Warwick, "Building Theories or Theories of Building? A Tension at the Heart of Digital Humanities," in: *A New Companion to Digital Humanities*, ed. by Susan Schreibman, Ray Siemens and John Unsworth, Chichester, West Sussex: Wiley Blackwell, 2016, 538–552, online: <https://doi.org/10.1002/9781118680605.ch37>.

34 These clashes within the digital humanities community have been widely debated, often under the opposing labels of 'hack' and 'yack' which already suggest that the roots of the tension may be of a social nature and related to warring definitions of scholarship; indeed, no one has yet put forth a convincing argument what conflict between theory and practice there might actually be, as opposed to a conflict between theoreticians and practitioners. For more on this topic, see Warwick 2016 and Bethany Nowviskie, "On the Origin of 'Hack' and 'Yack'," in: *Debates in the Digital Humanities 2016*, ed. by Matthew K. Gold and Lauren F. Klein, Minneapolis: University of Minnesota Press, 2016, 66–70, online: <https://doi.org/10.5749/9781452963761> [originally published in: *Journal of Digital Humanities* 3/2 (2014), online: <http://journalofdigitalhumanities.org/3-

seems to rest, rather, between binaries of contention. The formal and the informal.[35] The political and the apolitical.[36] The factual and fictional.

2/on-the-origin-of-hack-and-yack-by-bethany-nowviskie/>]. See also Tara McPherson, "Theory/Practice: Lessons Learned from Feminist Film Studies," in: *The Routledge Companion to Media Studies and Digital Humanities*, ed. by Jentery Sayers, London / New York: Routledge, 2018, 9–17; Stephen Ramsay and Geoffrey Rockwell, "Developing Things: Notes toward an Epistemology of Building in the Digital Humanities," in: *Debates in the Digital Humanities*, ed. by Matthew K. Gold, Minneapolis: University of Minnesota Press, 2012, 75–84, online: <https://doi.org/10.5749/9781452963754>; Tanya E. Clement and Daniel Carter, "Connecting Theory and Practice in Digital Humanities Information Work," in: *Journal of the Association for Information Science and Technology* 68/6 (2017), 1385–1396, online: <https://doi.org/10.1002/asi.23732>; and Natalie Cecire, "Introduction: Theory and the Virtues of Digital Humanities," in: *Journal of Digital Humanities* 1/1 (2011), online: <http://journalofdigitalhumanities.org/1-1/introduction-theory-and-the-virtues-of-digital-humanities-by-natalia-cecire/> (accessed 12 January 2023).

35 See, to start with, Joris van Zundert [et al.], "Cultures of Formalisation: Towards an Encounter between Humanities and Computing," in: *Understanding Digital Humanities*, ed. by David M. Berry, Basingstoke [et al.]: Palgrave Macmillan, 2012, 279–294; John Unsworth, "What is Humanities Computing and What is Not?" in: *Jahrbuch für Computerphilologie* 4 (2002), 71–84, online: <http://computerphilologie.digital-humanities.de/jg02/unsworth.html> (accessed 12 January 2023) [online reproduced without page numbers, for that reason hereafter in reference to said online version necessarily cited without page numbers and therefore as seemingly *passim* even in case of direct quotes]; and Paola Cotticelli-Kurras and Federico Giusfredi (Eds.), *Formal Representation and the Digital Humanities*, Newcastle upon Tyne: Cambridge Scholars Publishing, 2018.

36 The digital humanities arguably operate in a politicized environment influenced by their intersection with the (high) technology industry. A small selection of references: Lisa Spiro, "'This Is Why We Fight': Defining the Values of the Digital Humanities," in: *Debates in the Digital Humanities*, ed. by Matthew K. Gold, Minneapolis: University of Minnesota Press, 2012, 16–35, online: <https://doi.org/10.5749/9781452963754>; Elizabeth Weed and Ellen Rooney (Eds.), *In the Shadows of the Digital Humanities* [special issue of *differences: A Journal of Feminist Cultural Studies* 25/1 (2014)]; Lindsay McKenzie, "Digital Humanities for Social Good," in: *Inside Higher Ed* (9 July 2018), online: <https://www.insidehighered.com/news/2018/07/09/when-digital-humanities-meets-activism> (accessed 12 January 2023); Stanley Fish, "Stop Trying to Sell the Humanities," in: *The Chronicle Review* (17 June 2018), online: <https://www.chronicle.com/article/stop-trying-to-sell-the-humanities/> (accessed 12 January 2023); Roopika Risam, "Decolonizing Digital Humanities in Theory and Practice," in: *The Routledge Companion to Media Studies and Digital Humanities*, ed. by Jentery Sayers, London / New York: Routledge, 2018, 78–86; Roopika Risam, *New Digital Worlds: Postcolonial Digital Humanities in Theory, Praxis, and Pedagogy*, Evanston, Illinois: Northwestern University Press, 2018; Mike Grimshaw, "Towards a Manifesto for a Critical Digital Humanities: Critiquing the Extractive Capitalism of Digital Society," in: *Palgrave Communications* 4/21 (2018), online: <https://doi.org/10.1057/s41599-018-0075-y>; Elizabeth Losh and Jacqueline Wernimont (Eds.), *Bodies of Information:*

"The factual and the fictional?" you might ask. "The modelled and the model," I would answer. Here, we can already sense that questions of reproduction and representation are closely entangled – that the matter of methodology strongly impacts the matter of epistemology (as it, presumably, always does; and vice versa). There are limits to what we can know, even if we cannot learn those quite as precisely as we would like, for we cannot know what we do not know; but we can know what we cannot do. Or so one would assume.

It is commonly stated that modelling *may* not only be at the centre of the digital humanities but that it *is* and that, indeed, no argument can be made that it should not be because it must be.[37] This imperative is premised on the "fundamental dependence of any computing system on an explicit, delimited conception of the world or 'model' of it."[38] Therefore, some might argue that there is no conflict to be had, or that the only conflict to be had is one of *matter*, rather than the *mode* of scholarship. A conflict suggests tension, a choice between different paths. In the digital humanities, it would appear that there is not so much a tension of this

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Intersectional Feminism and Digital Humanities, Minneapolis: University of Minnesota Press, 2018; Barbara Bordalejo and Roopika Risam (Eds.), *Intersectionality in Digital Humanities* (Collection Development, Cultural Heritage, and Digital Humanities Series; vol. 4), York: Arc Humanities Press, 2019. See also Daniel Allington, Sarah Brouillette and David Golumbia, "Neoliberal Tools (And Archives): A Political History of Digital Humanities," in: *Los Angeles Review of Books* (1 May 2016), online: <https://lareviewofbooks.org/article/neoliberal-tools-archives-political-history-digital-humanities/> (accessed 12 January 2023), and the reply Juliana Spahr, Richard So and Andrew Piper, "Beyond Resistance: Towards a Future History of Digital Humanities," in: *Los Angeles Review of Books* (11 May 2016), online: <https://lareviewofbooks.org/article/beyond-resistance-towards-future-history-digital-humanities> (accessed 12 January 2023).

37 This sentiment is widespread; by way of example, cf. Pierazzo 2016, 37; Elena Pierazzo, "How Subjective is Your Model?" in: *The Shape of Data in the Digital Humanities: Modeling Texts and Text-Based Resources*, ed. by Julia Flanders and Fotis Jannidis, London / New York: Routledge, 2018, 117–132, here 119; and C. M. Sperberg-McQueen, "Playing for Keeps: The Role of Modeling in the Humanities," in: *The Shape of Data in the Digital Humanities: Modeling Texts and Text-Based Resources*, ed. by Julia Flanders and Fotis Jannidis, London / New York: Routledge, 2018, 285–310, here 285.

38 Willard McCarty, *Humanities Computing*, Basingstoke [et al.]: Palgrave Macmillan, 2005, 21.

kind but a tension of implementation; a chafing against a lack of choice, even within choices.

This leads us to a number of questions that are very difficult to answer, let alone to answer in any substantiated way. Do we discuss what we discuss in the digital humanities because we want to or because we have to (or feel that we have to)? Not that those would necessarily exclude each other. But: Can we do what we want to do if we have to? *Because* we have to? Has anyone in the digital humanities ever said 'I cannot and will not model this' rather than 'I can only model it like this'? That would seem like something worth considering and might, perhaps, best be left to the philosophers among us.

Due to the alleged importance of 'modelling' as a foundational principle for any and all activity in the digital humanities, we can suppose that contemplating the meaning and mechanism of modelling should be worthwhile on a micro level – how to implement a specific process of modelling in a specific circumstance of, in the case of computing, technological constraints – and on a macro level – how to understand something as a model to begin with. This, obviously, implies a reach so broad that it might encompass the entirety of the scientific (or 'scholarly') human project. It should come as no surprise, then, that an intent reading of the research literature beyond the confines of the digital humanities leads us to the fictionalism of a Hans Vaihinger as easily and as quickly as it surfaces the discourse that reverberated through the field of cybernetics in the 1960s and 1970s, particularly in Eastern Germany and the USSR.[39]

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39 On the topic of modelling discourses in the GDR and USSR, see, to begin with, Karlis Podnieks, "Philosophy of Modeling: Neglected Pages of History," in: *Baltic Journal of Modern Computing* 6/3 (2018), 279–303, online: <https://doi.org/10.22364/bjmc.2018.6.3.05>. On Hans Vaihinger, a neo-Kantian philosopher, see Arthur Fine, "Fictionalism," in: *Midwest Studies in Philosophy* XVIII (1993), 1–18, and Carlo Gentili, "Kant, Nietzsche und die 'Philosophie des Als-Ob'," in: *Nietzscheforschung* 20/1 (2013), 103–116. Although the interest in Vaihinger has been subdued in German-language academia, several publications were dedicated to him and his work in the last decades. Most notable among those are Klaus Ceynowa, *Zwischen Pragmatismus und Fiktionalismus: Hans Vaihingers ‚Philosophie des Als Ob'* (Epistemata: Reihe Philosophie; vol. 129), Würzburg: Königshausen & Neumann, 1993; Andrea Wels, *Die Fiktion des Begreifens und das Begreifen der Fiktion: Dimensionen und Defizite der Theorie der Fiktionen in Hans Vaihingers Philosophie des Als Ob* (Europäische Hochschulschriften:

The wide range of pre-digital literature on 'modelling', of which I have only indicated a narrow, Germanocentric selection, is rooted in the notion cited before, except that it goes deeper than that. It suggests a 'fundamental dependence' of any reasoning on a "conception of the world or 'model' of it."[40] One might argue that, regardless of the matter of computing, any scholarship cannot be about a thing-in-itself, to naïvely abuse the Kantian notion.[41] To describe something is to have observed it. To have observed it is to have processed it and through this process transformed it. Since our observation is all we can perceive, the existence of something beyond our observation is mostly suggested by the limitation of our individual point of view and our awareness of that due to the enrichment it experiences in the sharing of others' points of view; which we might also, in its collective communicative spirit, call *culture*.[42] One might even be tempted to think of Nietzsche and his *Genealogie der*

Reihe 20, Philosophie; vol. 539), Frankfurt am Main [et al.]: Peter Lang, 1997; and Matthias Neuber (Ed.), *Fiktion und Fiktionalismus: Beiträge zu Hans Vaihingers Philosophie des Als Ob* (Studien und Materialien zum Neukantianismus; vol. 33), Würzburg: Königshausen & Neumann, 2014.

40 McCarty 2005, 21. Elena Pierazzo, in fact, shares a very similar sentiment when she states that "modeling is at the core of any critical and epistemological activity" (Pierazzo 2018, 119).

41 For one of Kant's definitions of the concept, see Immanuel Kant, *Prolegomena zu einer jeden künftigen Metaphysik, die als Wissenschaft wird auftreten können*, Riga: Johann Friedrich Hartknoch, 1783, 104–105, § 32. For a discussion of Kant's inconsistent use of the term and the subsequent debates in the field of philosophy, see Gerold Prauss, *Kant und das Problem der Dinge an sich* (Abhandlungen zur Philosophie, Psychologie und Pädagogik; vol. 90), Bonn: Bouvier, 1974; Gerold Prauss, *Die Einheit von Subjekt und Objekt: Kants Probleme mit den Sachen selbst*, Freiburg / München: Karl Alber, 2015; and Cord Friebe, "Über einen Einwand gegen die Zwei-Aspekte-Interpretation von Kants Unterscheidung zwischen Erscheinung und Ding an sich," in: *Zeitschrift für philosophische Forschung* 61/2 (2007), 229–235. See also, more generally, Nicholas F. Stang, 'Kant's Transcendental Idealism,' in: *The Stanford Encyclopedia of Philosophy* (Winter 2022 edition), ed. by Edward N. Zalta and Uri Nodelman, online: <https://plato.stanford.edu/archives/win2022/entries/kant-transcendental-idealism/>.

42 This calls the topic of *intersubjectivity* to mind and with it Carnap and Husserl, see Harald A. Wiltsche, "Models, Science, and Intersubjectivity," in: *Husserl's Phenomenology of Intersubjectivity: Historical Interpretations and Contemporary Applications*, ed. by Frode Kjosavik, Christian Beyer and Christel Fricke, London / New York: Routledge, 2019, 339–358, and Florian Fischer, "Carnap's Logic of Science and Reference to the Present Moment," in: *Kriterion: Journal of Philosophy* 30/2 (2016), 61–90. See also Martin Kusch, *Knowledge by Agreement: The Programme of Communitarian Epistemology*, Oxford: Clarendon Press, 2002.

Moral, where he writes: "There is only a perspectival seeing, only a perspectival 'gaining insight'; and the more affects we allow to speak on a thing, the more eyes, different eyes we use to observe the same thing, the more complete our 'concept' of that thing, our 'objectivity' will be."[43]

What then, is the difference between a concept and a model? One might say that the question of how to conceptualize something is the question of how to approach it. The question of how to model something is the question of how to structure that approach. And the question of how to compute such a model is the question of how to translate its structures into computable structures. This does not quite, however, illumine what the starting and end points are, nor does it help us understand where and how we might intervene in these processes.

I want to return to the *fact* vs. *fiction* distinction for a brief moment as it is not one that we see very often in the digital humanities; and this despite the fact that we might refer to it as the 'original' framing device for modelling discourses in the early 20th century. Take the following quote by H. L. Mencken, for example:

> The human mind, at its present stage of development, cannot function without the aid of fictions, but neither can it function without the aid of facts—save, perhaps, when it is housed in the skull of a university professor of philosophy.[44]

This barbed remark, made in 1924, unwittingly hints at a central issue. In his review of Hans Vaihinger's *The Philosophy of 'As If'*, Mencken

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43 Friedrich Nietzsche, *Zur Genealogie der Moral: Eine Streitschrift*, Leipzig: Naumann, 1887, cited from the *Digitale Kritische Gesamtausgabe* (eKGWB), published on the basis of the *Kritische Gesamtausgabe Werke*, ed. by Giorgio Colli and Mazzino Montinari, Berlin / New York: De Gruyter, 1967– and the *Nietzsche Briefwechsel Kritische Gesamtausgabe*, ed. by Paolo D'Iorio, Berlin / New York: De Gruyter, 1975–, 2009–, GM-III-12, online: <http://www.nietzschesource.org/#eKGWB/GM-III-12> (accessed 12 January 2023), original: "Es giebt nur ein perspektivisches Sehen, nur ein perspektivisches ‚Erkennen'; und je mehr Affekte wir über eine Sache zu Worte kommen lassen, je mehr Augen, verschiedne Augen wir uns für dieselbe Sache einzusetzen wissen, um so vollständiger wird unser ‚Begriff' dieser Sache, unsre ‚Objektivität' sein.")
44 H. L. Mencken, "Philosophers as Liars," review, in: *The American Mercury* (October 1924), 253–255, here 255. H. L. Mencken (1880–1956) was an American journalist and cultural critic known for his acerbic and controversial remarks.

accused the neo-Kantian philosopher of stating the obvious which is – as Mencken puts it – that "[m]an can only think in logical patterns, and when there is a vacant space he must fill it as best he may, or stop thinking altogether."[45] Mencken was not alone in his criticism. The philosopher of science Arthur Fine has likened the response Vaihinger's work provoked in the 1920s to the response Thomas Kuhn's work provoked in the 1960s and 1970s,[46] the difference being that Kuhn is still commonly cited whereas Vaihinger's reception declined after the Second World War.[47] The fact that he introduced the term 'logical positivism' – which was later appropriated by the *Wiener Kreis* despite their overall dismissal of his work – is still little more than a footnote and often not even elevated

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45 Ibid., 254.

46 Fine 1993, 4. Arthur Fine can be credited with single-handedly reviving interest in Vaihinger's philosophy, at least in the Anglophone reception, cf. Mauricio Suárez, "Fictions in Scientific Practice," in: *Fictions in Science: Philosophical Essays on Modeling and Idealization*, ed. by Mauricio Suárez, London: Routledge, 2009, 3–18, here 4.

47 Cf. ibid. Reasons for the decline may already be found in the 1930s: Not only did Vaihinger himself die in 1933, the *Kant-Gesellschaft* that he had founded suffered from significant losses of membership during the NS rule, due to forced retirements and emigration of its Jewish members (see, for example, the biography of Arthur Liebert, a philosopher who headed the *Kant-Gesellschaft* for many years and was forced to emigrate in 1933, cf. Günther Wirth, *Auf dem „Turnierplatz" der geistigen Auseinandersetzungen: Arthur Liebert und die Kantgesellschaft (1918–1948/49)*, Ludwigsfelde: Ludwigsfelder Verlagshaus, 2004; for a quick overview, see 13–17; Liebert was also, I might mention here, a student of Wilhelm Dilthey who is of some importance to the history and theory of the German humanities). The *Kant-Gesellschaft* was finally dissolved in 1938, cf. ibid. See also George Leaman and Gerd Simon, "Die Kant-Studien im Dritten Reich," in: *Kant-Studien* 85/4 (1994), 443–469. The following is speculative but it stands to reason that, aside from "the intellectual sea change that followed the war and restructured the philosophical canon" (Fine 1993, 4), the political dissolvement of the institutional legacy of Vaihinger and the persecution of his colleagues and acquaintances may have contributed to the waning reception of his work thereafter. We should also note, however, that a cursory research produces post-war references to Vaihinger in contexts which Fine seems to preclude by stating quite strongly that "[e]xcept in discussions of legal philosophy, Vaihinger did not survive the intellectual sea change" (Fine 1993, 4). One article that would belie this statement is Eva Schaper, "The Kantian Thing-in-Itself as a Philosophical Fiction," in: *The Philosophical Quarterly* 16/64 (1966), 233–243; although Schaper does not discuss Vaihinger extensively, she is well-familiar with his work and uses it as a starting point for her own considerations. While it certainly appears to be true that Vaihinger's reception declined sharply from the 1940s onwards, his obscurity does not seem to have been all-encompassing.

to that level of prominence.[48] But his philosophy of 'useful fictions' is not without its relevance today, considering Fine's assessment:

> For the dominant self-conception of postwar science has been that of science as the builder of useful models. In our century Vaihinger was surely the earliest and most enthusiastic proponent of this conception, the preeminent twentieth-century philosopher of modeling.[49]

Interestingly enough, Vaihinger, who did not speak of 'models' himself, was already credited with laying this groundwork in the 1950s, even if his overall influence had diminished by then.[50]

Vaihinger's philosophy of as-if is particularly interesting since many of the conflicts sketched so far, including the *Hamburger Faksimile-Streit*, would seem to be contained in those two little words. To sample but one part of Vaihinger's writing which confirms Fine's assessment that it is remarkably close to post-war discourses on modelling: While

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48 Vaihinger used several terms such as *logischer Positivismus* and *idealistischer Positivismus* (cf. Fine 1993, 2–3). Despite the renewed interest in Vaihinger and fictionalism in the English-speaking world, due to Fine's article, Vaihinger's relation to the *Wiener Kreis* has not been subject to study, as far as I can tell. See, for example, Friedrich Stadler, *Der Wiener Kreis: Ursprung, Entwicklung und Wirkung des Logischen Empirismus im Kontext*, Cham: Springer, 2015, in which Vaihinger is only mentioned twice – once on page XXV of the prologue and once on page 61. Both mentions concern the publication of the journal *Annalen der Philosophie*. As Fine notes, the logical positivists themselves rarely commented on Vaihinger and if they did, they made "curt and disparaging references to Vaihinger's central ideas" (Fine 1993, 3). An example for this can be found in Moritz Schlick's *Positivismus und Realismus* (1932), in which he mentions Vaihinger in passing: "[…] und wenn sein [Ernst Laas'] Schüler Hans Vaihinger seiner ‚Philosophie des Als Ob' den Untertitel eines ‚idealistischen Positivismus' gab, so ist das nur einer von den Widersprüchen, an denen dieses Werk krankt." (Moritz Schlick, "Positivismus und Realismus (1932)," in: *Wiener Kreis: Texte zur wissenschaftlichen Weltauffassung von Rudolf Carnap, Otto Neurath, Moritz Schlick, Philipp Frank, Hans Hahn, Karl Menger, Edgar Zilsel und Gustav Bergmann*, ed. by Michael Stöltzner and Thomas Uebel, Hamburg: Felix Meiner, 2006, 187–222, here 192).

49 Fine 1993, 16.

50 Cf. Paul Meadows, "Models, Systems and Science," in: *American Sociological Review* 22/1 (1957), 3–9, here 8: "It was one of the many services performed by Vaihinger to dramatize for contemporary scientific theory the roles that heuristic devices—constructs, fictions, in other words, models—play as members of 'the system of logical sciences'."

he does not speak of 'models' but rather of 'fictions', he defines a fiction as a "scientific fabrication for practical purposes."[51] And he goes on to differentiate between a hypothesis and a fiction in the following way:

> While every hypothesis seeks to be an adequate expression of a yet unknown reality and aims to represent that objective reality accurately, the fiction is formulated in the knowledge that it is an inadequate, subjective, figurative way of imagining that inherently cannot converge with reality and that can therefore not be verified afterwards, as one hopes to do with a hypothesis.[52]

If we understand models – which is also to say, the representations of cultural heritage that they mould 'in their image' – to be fictions whose goal it is to be useful for a specific purpose, not *true* (which is not the same as to say that they are false), then that changes the entire conversation. It would be interesting to explore Vaihinger's work in more depth, especially since we do not find any overt investigation of or engagement with this kind of literature in digital humanities scholarship.[53]

Since the digital humanities are set apart by the necessity of confronting questions that, in other disciplines, are only addressed at the discretion of those with a vested interest in epistemology, one would think that they would have, at this point, produced a considerable body of research documenting their efforts in that regard. This is not so.[54] It would

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51 Hans Vaihinger, *Die Philosophie des Als Ob: System der theoretischen, praktischen und religiösen Fiktionen der Menschheit auf Grund eines idealistischen Positivismus – Mit einem Anhang über Kant und Nietzsche*, Berlin: Reuther & Reichard, 1911, 65, original (whole sentence): "Man muss nur immer mit ‚Fiktion' den fest bestimmten Begriff einer wissenschaftlichen Erdichtung zu praktischen Zwecken verbinden."

52 Ibid., 606, original: "Während jede Hypothese ein adäquater Ausdruck der noch unbekannten Wirklichkeit sein, und diese objektive Wirklichkeit zutreffend abbilden will, wird die Fiktion mit dem Bewusstsein aufgestellt, dass sie eine inadäquate, subjektive, bildliche Vorstellungsweise ist, deren Zusammentreffen mit der Wirklichkeit von vornherein ausgeschlossen ist, und die daher auch nicht hintennach, wie man das bei der Hypothese hofft, verifiziert werden kann."

53 It should be noted that Willard McCarty references Vaihinger briefly in McCarty 2005, 48. It is the only reference to Vaihinger in a digital humanities context that I am aware of, which is not to say that it is necessarily the only one.

54 Any observation of an imbalance between the practical side of the digital humanities and the theoretical side of the digital humanities is necessarily biased in itself because it

be too strong a statement to call the neglect of meeting this demand on a level of note a collective failure but it might be fair to diagnose it as one of the root causes of what Julia Flanders has termed the 'productive unease' within the field.[55]

Pointing this out runs the risk of stating the obvious – but even though the statement might be readily apparent, the extent of it has yet to be fully appreciated. One reason for this might lie in the perception of the intents and purposes of the field. This perception is often bound to broad keywords such as statistics, big data, machine translation. It is easy to be overwhelmed by the implications of such words or by the research literature that they may produce within the digital humanities and on the edges of the digital humanities.[56]

There is another view of the field, a view wherein scholarship leans heavily towards expressing knowledge from the humanities in a way that can be computed rather than computing something that has not been

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judges that perceived imbalance against a supposedly possible state of balance; more than that, it presumes to know what such a state might be and even *should* be. We must be aware that the assessment of such situations is always subjective but in this case, it might be said to be substantiated by the infrastructural reality of the field and the work done within. The comparative lack of substantial theoretical writings in the field of digital humanities not only makes sense in that context – it is difficult to imagine how it could be any different. For a long time, the main activities in the field, at least in a German context, have been supported through the external funding of project-related work with the goal of producing a specific result (e.g. the digitization of a corpus, the edition of a collection of charters, the virtual reconstruction of a historical monument etc. pp.). This must be taken into consideration. Reflection takes time and time costs money.

55 See Julia Flanders, "The Productive Unease of 21st-Century Digital Scholarship," in: *Digital Humanities Quarterly* 3/3 (2009), online: <http://www.digitalhumanities.org/dhq/vol/3/3/000055/000055.html> (accessed 12 January 2023); although this unease, as Flanders tells it, is a result of the critical engagement with methods, tools, and epistemology in the digital humanities. Both might be true: That this unease is the result of a critical engagement but that it has also not been 'solved' yet through critical engagement. The existence of this unease might also be overstated.

56 Interdisciplinary interviews conducted for the *Knowledge Complexity* project have shown that there is a 'gulf of epistemic cultures' and revealed some of the terminological tensions underlying the topics discussed so far; see Jennifer Edmond and Jörg Lehmann, "Digital Humanities, Knowledge Complexity, and the Five 'Aporias' of Digital Research," in: *Digital Scholarship in the Humanities* 36 suppl. 2 (2021), ii95–ii108, online: <https://doi.org/10.1093/llc/fqab031>. On the topic of big data, see also, by the same authors, Jennifer Edmond [et al.] (Eds.), *The Trouble With Big Data: How Datafication Displaces Cultural Practices*, London [et al.]: Bloomsbury Academic, 2022, online: <https://doi.org/10.5040/9781350239654>.

expressed. I would not want to suggest that this marks a clear division between automated and non-automated processes: In fact, automation has nothing to do with it, principally, since the expression of knowledge only requires that there is some type of knowledge or information to express, regardless of how it was acquired in the first place. The topic of 'knowledge' within the humanities is vast, even if the debatable distinction between data, information, and knowledge as well as other definitional difficulties are disregarded.[57] One explanation for the complexity of knowledge in the humanities could be that that which is of interest to humanists is buried under deep layers of ambiguity because human life is conceived by human thought and perceived in human culture, neither of which are precise. In this view, humanistic scholarship shifts these layers to bring different dimensions to light and this process is called 'interpretation'. But while this involves favouring one point of view over another, it is the collection of all that best approximates reality, if we take reality to be something that exists outside of ourselves as well as inside of ourselves; something material that can be manipulated in its meaning (or rather in the meaning it is said to have) but not in its meaningfulness, due to a purpose imparted to it by its mere physical existence and finiteness rather than by human perception. This returns us to our earlier point of departure: If modelling something means to structure it and if computing a model means to translate its structures into computable structures, then we can already sense that these processes are accompanied by a 'loss' – a loss of information, if you will, although much was also lost when we extracted texts from manuscripts and printed them in books; yet barely anyone framed it that way.

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57 For a philosophical viewpoint on 'knowledge' in the humanities, see Joseph Margolis, "Knowledge in the Humanities and Social Sciences," in: *Handbook of Epistemology*, ed. by Ilkka Niiniluoto, Matti Sintonen and Jan Woleński, Dordrecht: Springer, 2004, 607–645, online: <https://doi.org/10.1007/978-1-4020-1986-9_17>. On the topic of the knowledge pyramids often endorsed in digital humanities contexts, see Martin Frické, "The Knowledge Pyramid: A Critique of the DIKW Hierarchy," in: *Journal of Information Science* 35/2 (2009), 131–142. For a more general overview of the field of knowledge management (KM), see Sue Newell, "Managing Knowledge and Managing Knowledge Work: What We Know and What the Future Holds," in: *Journal of Information Technology* 30/1 (2015), 1–17.

If we take scholarship in the humanities to be the human perception of human perception (where it is a reflection reliant on so-called 'cultural heritage'), this does not devalue findings but it does complicate matters by at least twice removing our description of a source from the source, depending on what we take the source to be, with sometimes nary an intervention along the way to corroborate our findings through means of external observation.[58]

It seems that in order to reclaim some of the ambiguity that is lost in the process of perception, scholars in the humanities tend to rely on the ambiguity of expression inherent in the natural language with which scholarship is commonly disseminated. For critics of the humanities, this ambivalence, capable of capturing more complex realities than are strictly evidentiary but also capable of inferring more than can be reasonably supported through argument, undermines their credibility as academic disciplines and even some humanists argue that it points towards the need for a change in status: Hans Ulrich Gumbrecht's promotion of the concept of 'contemplation' comes to mind.[59]

The digital humanities serve as a crucible in these debates, inadvertently or not, because computing brings two aspects to the fore that concern these questions: The first aspect is the aspect of external observation which primarily pertains to computing as a way of analysis that ought to generate 'knowledge' or whatever is taken to be knowledge; here, the computer is viewed as an externalising, potentially even objectifying

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58 Means of external observation (or rather 'externalizing' since it does not occur of its own accord) would be, for example, the use of radiocarbon dating to date a historical object beyond educated guesswork, which is not to say that educated guesswork cannot be accurate in itself or even more accurate and perceptive than such an 'externalizing' way of corroboration; on the topic of radiocarbon dating, see R. E. Taylor and Ofer Bar-Yosef, *Radiocarbon Dating: An Archaeological Perspective*, London / New York: Routledge, ²2014.

59 Cf. Hans Ulrich Gumbrecht, "Die ewige Krise der Geisteswissenschaften – und wo ist ein Ende in Sicht?" in: *Beiträge zur Hochschulpolitik* 4 (2015), 3–28, particularly 25f. See also Hans Ulrich Gumbrecht, "Contemplation – as an End of the Humanities," keynote at the conference *The Ends of the Humanities*, University of Luxembourg, 10–13 September 2017, and the conversation in the *Talk! Humanities* series, organised by the University of Luxemburg, episode 1 (13 August 2019), <https://www.youtube.com/watch?v=Ms8zgavXTp8> (video recording, accessed 1 September 2023); this interview includes a section about the digital humanities, starting at minute 16:09.

factor – although the results are still subject to human interpretation. The second aspect is the aspect of explicit expression and that is of particular interest here.

For something to be machine-readable, it needs to be expressed in a formal language which "puts humanities computing, or rather the computing humanist, in the position of having to do two things that mostly, in the humanities, we don't do: provide unambiguous expressions of ideas, and provide them according to stated rules."[60] This is achieved through the use of text encoding in general and the creation of ontologies, taxonomies, schemas, controlled vocabularies, and so on, specifically.[61] But what does this mean? It means that assertions about a humanistic object of study such as a painting, a text, a piece of music, an event in history, et cetera, need to be *fixed;* and they need to be fixed in a different way than would occur if a scholar wrote about these items or even just a greater movement or idea that they belong to, or are assigned to belong to, in an article or monograph. While this fixation does not make an assertion any more or less true or any more or less ever-lasting, it requires a commitment to an unambiguous statement, as John Unsworth pointed out.[62] A lack of ambiguity goes hand in hand with a need for precision. The humanities, however, are the 'inexact sciences', as Jacob Grimm referred to them.[63] This provides obstacles on a purely practical level when it comes, for example, to the heterogeneity of historical data

60 Unsworth 2002.

61 See, to start with, Francesca Tomasi, "Modelling in the Digital Humanities: Conceptual Data Models and Knowledge Organization in the Cultural Heritage Domain," in: *Historical Social Research* suppl. 31 (2018), 170–179, online: <https://doi.org/10.12759/hsr.suppl.31.2018.170-179>.

62 Cf. Unsworth 2002.

63 Not in a negative manner, however. If anything, he meant to emphasize the importance of the humanities because they are, in his view, concerned with matters 'closer to the heart' (indeed, he argues for them with the liberal patriotism of his time in mind), cf. Jacob Grimm, "Über den Werth der ungenauen Wissenschaften," in: *Texte zur Theorie der Geisteswissenschaften*, ed. by Athena Panteos and Tim Rojek, Stuttgart: Reclam, 2016, 58–63 [reprint of *Kleinere Schriften VII: Recensionen und vermischte Aufsätze*, Hildesheim [et al.]: Olms, 1966, 563–566 [in itself reprint of Berlin 1884]; originally speech held in Frankfurt, 1846].

pertaining to locations and dates or the in-depth markup of complex textual phenomena.[64]

It might be said that in the humanities, some things are better known than others. Some overlap. Some contradict. Some are supported by a wealth of source material. Some are pure conjecture. But few of them are formalized, be it in a classification system or otherwise – and if they are, their logic may be inferred by a human observer only because our mind can rationalize incongruities or, at the very least, bypass them. That is not the same as a half-formalized system withstanding the much less flexible scrutiny of a machine (by which I mean a computational processing of information).

The cognitive scientist David Kirsh has emphasized that "computation is a process of making *ex*plicit, information that was *im*plicit."[65] The computation of humanistic information could therefore be helped along by making it more explicit in the first place. What is not as easily accomplished, however, is making *exact*, information that was inexact. There are good reasons why an information in the humanities may be inexact. It might be as simple as conflicting reports over when something is said to have occurred in history, or what is said to have occurred, or who is said to have done this and that, or who is suspected to have done this and that. Similarly, if a scholar reads a medieval manuscript, they might encounter corruptions, meaning that parts of the text are not intelligible anymore due to damage to the physical object or due to the scribe; it might be possible, however, to make an educated guess as to what it could have said and different editors might guess differently, depending

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64 The challenges of comprehending complex textual phenomena are highlighted, for example, in Dirk van Hulle, *Textual Awareness: A Genetic Study of Late Manuscripts by Joyce, Proust, and Mann*, Ann Arbor: University of Michigan Press, 2004. As for the heterogeneity of historical data, see Manfred Thaller, "Ungefähre Exaktheit: Theoretische Grundlagen und praktische Möglichkeiten einer Formulierung historischer Quellen als Produkte ‚unscharfer' Systeme," in: *Historical Social Research* suppl. 29 (2017), 138–159, online: <https://doi.org/10.12759/hsr.suppl.29.2017.138-159> [originally published in: *Neue Ansätze in der Geschichtswissenschaft: Eine philosophisch-historische Tagung* (Conceptus-Studien; vol. 1), ed. by Herta Nagl-Docekal and Franz Wimmer, Wien: VWGÖ, 1984, 77–100].

65 David Kirsh, "When is Information Explicitly Represented?" in: *The Vancouver Studies in Cognitive Science* (1990), 340–365, here 340.

on their own personal familiarity and experience with the material and similar materials. One might also simply take a look at a painting by Jheronimus Bosch and soon realize the futility of hoping to accurately describe it in all of its minutiae in a way that another scholar would unwittingly reproduce exactly the same (see **FIG. 2**).[66] This is our first hint that parsing semantic complexity cannot be viewed independently from the media and language in which it is communicated or in which it has, to put it differently, survived and come down to us, to be decoded, in the approach of some, or to be interpreted, in the approach of others, for no other purpose than the understanding of cultural expression itself or for the aggregation of a web of data, information, and knowledge that ought to signify a beyond; beyond the single mind (and it has to be noted that the digital humanities would seem to think that *decoding* and *interpreting* are synonymous although the former involves a claim to a level of description that is intermediate – between the manifested and the understood, in the sense of extracted rather than abstracted).

(In-)exactness of expression is not a problem in itself. It is the arbitrary distribution of exactness over a corpus of knowledge that poses the problem, given that all scholarship in the humanities relies, to a certain degree, on comparative study, viz. one that *relates* information. (And it is, arguably, all the better, the better it is at performing this task.) This issue goes far beyond the cataloguing of documents. As hinted, what is established as known – or unknown – in the humanities is very much bound to the scholar who is doing the establishing; to the sharpness of their mind; to the precision of their language; to the debate that follows.[67] It is, in short, a matter of argument: the provenance of argument and the persuasion of argument.

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66 There is an interactive online guide available to explore Bosch's painting *The Garden of Earthly Delights* (c. 1490–1510) but the annotation that it offers is centred around thematic highlights and not an attempt at a formal description; see <https://tuinderlusten-jheronimusbosch.ntr.nl/en> (accessed 12 January 2023).

67 On the topic of humanities scholarship being sublimated not merely (or perhaps not even primarily) through logically stringent argumentation but rather through social and rhetorical strategies, see Ralf Klausnitzer, Carlos Spoerhase and Dirk Werle (Eds.), *Ethos und Pathos der Geisteswissenschaften: Konfigurationen der wissenschaftlichen Persona seit 1750* (Historia Hermeneutica. Series Studia; vol. 12), Berlin / Boston: De Gruyter, 2015. Different disciplines and different traditions of different disciplines

Although it is not unfathomable that concerns over asserting assumptions might be voiced in the digital humanities, their implication carries little weight in practice. It cannot, after all, be helped that humanistic objects of study are being digitized and that their description, even if just at its most basic level, which might be the level of bibliographical metadata, is something that is asked of scholars – and those working at cultural heritage institutions.[68] (Indeed, even if such digitization efforts were to cease tomorrow, it would take a large-scale catastrophe to erase everything already digitized so far; and in such an event, it seems likely humanity would be erased along with it.)

The need for 'knowledge' from the humanities to be expressed formally is necessitated by the ongoing digitization of materials and the desire to make them searchable, accessible, and analysable in the spirit of the *semantic web* notion,[69] and the need for this formal expression of knowledge or information to be modelled is necessitated by the nature of the 'computer' and the desire to create data sets that are well-formed, interoperable, and informative with as accurate an architecture and structure as can be mustered.

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in different countries will, of course, differ in their criteria for what is entered 'into' the academic conversation and what is, conversely, deemed unscholarly and discarded; the first condition for this usually being that the scholar should occupy an academic position at a university or a research institute (and this is, of course, by no means restricted to the humanities). However, if we take a very broad view, it is rather noticeable how in the Anglophone discourse about the purpose of the humanities, there is often an argument that they teach 'critical thinking skills' which one presumes to then also be part of their methodology – for how else to teach them? In the US context, this is evidently linked to a derision of 'critical theory', cf. Paul Jay, *The Humanities 'Crisis' and the Future of Literary Studies*, Basingstoke [et al.]: Palgrave Macmillan, 2014, 24f. See also, merely by way of example, articles such as Patricia Cohen, "In Tough Times, the Humanities Must Justify Their Worth," in: *New York Times* (24 February 2009), online: <https://www.nytimes.com/2009/02/25/books/25human.html> (accessed 12 January 2023).

68 On the topic of cultural heritage digitization, see Caroline Y. Robertson-von Trotha and Ralf H. Schneider (Eds.), *Digitales Kulturerbe: Bewahrung und Zugänglichkeit in der wissenschaftlichen Praxis*, Karlsruhe: KIT Scientific Publishing, 2015.

69 See, for the origin of the notion, Tim Berners-Lee, James Hendler and Ora Lassila, "The Semantic Web," in: *Scientific American* (17 May 2001), online: <https://www.scientificamerican.com/article/the-semantic-web/> (accessed 12 January 2023). See also Grigoris Antoniou, Paul Groth, Frank van Harmelen and Rinke Hoekstra, *A Semantic Web Primer*, Cambridge, Massachusetts / London: MIT Press, ^{3}2012 [originally published 2004].





FIG. 2: Detail from *De tuin der lusten* by Jheronimus Bosch (c. 1490–1500), Museo del Prado, Madrid, <https://commons.wikimedia.org/wiki/File:The_Garden_of_earthly_delights.jpg> (Wikimedia Commons, PD).

As a discipline seemingly driven by the desire for innovation, this narrative casts the digital humanities in a particular light, and such a sober framing is not the only way to imagine their purpose, especially once you move away from methodology and towards the political and social. But the real objections might come when the discussion shifts towards questioning the academic influences that the digital humanities inherit or, alternatively, exert. Is it, in itself, sufficient to implement something to the best of the current knowledge and abilities, framed in terms borrowed from computer science (in turn borrowed from philosophy, e.g. 'ontology')?[70] Or might it be useful to turn inwards, towards the humanities and their disciplinary coming of age? What is it that we do in the humanities, exactly? And what is it that we wish to achieve? These questions are rhetorical: Neither is there a common global goal nor history on which to build it. But there are histories and there are commonalities we could draw out further.

Counterintuitively, perhaps, given the impetus to move forward, another look into the past might be in order.

C.
GRIMM'S EULOGY ON LACHMANN

When Karl Lachmann died in 1851, his friend and fellow philologist Jacob Grimm delivered a eulogy at the *Königliche Akademie der Wissenschaften zu Berlin*. Instead of honouring the etiquette of the occasion, he launched into a candid examination of the different approaches to scholarship between the deceased and himself – a denouncement that has been described as an "attack."[71] Grimm was well-aware of the effect, acknowledging that if Lachmann had been alive and standing behind

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70 Cf. Barry Smith, "The Relevance of Philosophical Ontology to Information and Computer Science," in: *Philosophy, Computing and Information Science*, ed. by Ruth Hagengruber and Uwe Riss, London / New York: Routledge, 2014, 75–83.

71 Pier Carlo Bontempelli, *Knowledge, Power, and Discipline: German Studies and National Identity* (Contradictions; vol. 19), transl. by Gabriele Pool, Minneapolis: University of Minnesota Press, 2004, 16.

him, the man might have shaken his head in disapproval.[72] At a later point in the speech, when discussing Lachmann's work – partly with praise, partly in a critical manner –, Grimm inserted: "Why should it not be said here?"[73]

What he was saying was emblematic for the process that the new academic disciplines forming in Europe at that time were going through, in this case the field of *Germanistik* (German studies). In the research literature, this has been described retrospectively in adventurous, if not quasi-colonial, terms reminiscent of conquering lands – disciplines are metaphorically presented as unmapped stretches of nature, *terrae incognitae*, while early scholars are cast as explorers, some in search of whatever they might find, others with the intent of cultivating a garden; a duality marked by unruliness on the one and order on the other side; the joy of discovery set against the will to gain control.[74] In the field of geography, for example, this 'polarity' was supposedly embodied by Alexander von Humboldt and Carl Ritter.[75]

In the field of *Germanistik*, we may want to leave this kind of narrative behind but still recognize that there was a certain tension which

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72 Jacob Grimm, "Rede auf Lachmann," in: *Kleinere Schriften* (vol. 1: Reden und Abhandlungen), ed. by Karl Müllenhoff, Berlin: Dümmler, 1864, 145–162, here 146 [originally printed in *Abhandlungen der Königlichen Akademie der Wissenschaften zu Berlin. Aus dem Jahre 1851*, Berlin: Druckerei der Königlichen Akademie der Wissenschaften, 1852, I–XVI]. Paraphrased, original: "[…] stände er hinter mir, er würde vielleicht einigemal den kopf schütteln, nicht von meiner rede sich abwenden." [The lack of capitalization is in the original.]

73 Grimm 1864, 157, original: "[…] warum soll es hier nicht gesagt werden?"

74 Indeed, Grimm and Lachmann are usually presented as the dichotomy between a 'wild philology' by Grimm and a 'domesticated philology' by Lachmann, cf. Ulrich Wyss, *Die wilde Philologie: Jacob Grimm und der Historismus*, München: C.H. Beck, 1979. See also Bontempelli 2004, 17. On the prevalent narrative of a Grimm-Lachmann polarity, see also Johanna Wolf, *Kontinuität und Wandel der Philologien: Textarchäologische Studien zur Entstehung der Romanischen Philologie im 19. Jahrhundert* (Romanica Monacensia), Tübingen: Narr, 2012, 93.

75 For the comparison between the situation of Ritter-Humboldt and Lachmann-Grimm cf. Harald Weigel, *„Nur was du nie gesehn wird ewig dauern": Carl Lachmann und die Entstehung der wissenschaftlichen Edition*, Freiburg im Breisgau: Rombach, 1989, 27. For more information on Ritter vs. Humboldt and the alleged polarity of their relationship, see Hanno Beck, "Carl Ritter und Alexander von Humboldt – eine Polarität," in: *Carl Ritter – Geltung und Deutung: Beiträge des Symposiums anläßlich der Wiederkehr des 200. Geburtstages von Carl Ritter November 1979 in Berlin (West)*, ed. by Karl Lenz, Berlin: Reimer, 1981, 93–100.

was exemplified by Jacob Grimm and Karl Lachmann. Although both were disparate in their intentions to some degree, they are regarded as the founding fathers of the discipline to this day, together with Jacob's brother Wilhelm Grimm and Georg Friedrich Benecke.[76] The Grimm brothers are still widely known to the public for their collection of folklore and to academic audiences for their linguistic achievements[77] and Lachmann, while unknown to the public, remains a household name in academic circles concerned with scholarly editing.[78] His strict approach prevailed[79] and helped transform the *Germanistik* into a "true discipline"[80] – or so the story goes. This, however, came at a price; the price of selection.

As Michel Foucault puts it:

> That the amateur scholar ceased to exist in the eighteenth and nineteenth centuries is a well-known fact. So the university has a selective role: it selects knowledges. Its role is to distinguish between qualitative and quantitative levels of knowledge, and to distribute knowledges accordingly. […] Its role is to homogenize knowledges by establishing a sort of

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76 See Christoph König, Hans-Harald Müller and Werner Röcke (Eds.), *Wissenschaftsgeschichte der Germanistik in Porträts*, Berlin / Boston: De Gruyter, 2012; see in particular the first three contributions about Benecke, Grimm, and Lachmann, 1–32.
77 See Konrad Koerner, "Jacob Grimm's Place in the Foundation of Linguistics as a Science," in: *Word* 39/1 (1988), 1–20.
78 Cf. off-hand references such as in the following conference report where there is mention of the "historical development of editorial theory from Lachmann up to the present day" (Harmut Beyer, Inga Hanna Ralle and Timo Steyer, "Digitale Metamorphose: Digital Humanities und Editionswissenschaft. Tagung an der Herzog August Bibliothek Wolfenbüttel, 2.–4. November 2015," in: *editio* 30/1 (2016), 222–228, here 223, online: <https://doi.org/10.1515/editio-2016-0014>, original: "historische Entwicklung der Editionswissenschaft von Lachmann bis heute"). And of course there are many more extended references to and discussions of Lachmann in literature about scholarly editing. This is merely to illustrate the casual *Selbstverständlichkeit* with which Lachmann is referred to as the origin of textual scholarship.
79 It has come under criticism since its inception, most notably from the *New Philology* movement, but is still remarkably present in its impact. For an evaluation of Lachmann's legacy, see Eberhard Güting, "Die Internationalität der neutestamentlichen Textkritik zwischen Praxis und Theorie seit Karl Lachmann," in: *Internationalität und Interdisziplinarität der Editionswissenschaft* (editio / Beihefte; vol. 38), ed. by Michael Stolz and Yen-Chun Chen, Berlin / Boston: De Gruyter, 2014, 169–178, online: <https://doi.org/10.1515/9783110367317.169>.
80 Bontempelli 2004, 19.

> scientific community with a recognized status; its role is to organize a consensus.[81]

Grimm was not an amateur but the purpose of his scholarship was intricately linked to his political activism.[82] Lachmann, on the other hand, was, for all intents and purposes, only interested in what he saw on the pages of the manuscripts that he was studying. He was carefully meticulous, one might even say clinical, in his editorial choices when assessing the handwritten transmission of ancient, medieval, and early modern texts; excising what he perceived to be errors, normalizing spelling, purging 'flaws' in an attempt to arrive at the 'pure' and ideal archetypical text that the author had presumably intended – as divined by the editor, reinforced by his authority.[83] Where Grimm sought to capture the 'wild' and 'romantic' nature of a national past he wanted to see established in a unified, liberal nation state, as the common notion would have it, Lachmann sought to establish definitive readings of texts, no more, no less.[84]

In his eulogy, Grimm described their difference as the difference between two types of philologists: "those who pursue words for the sake of a matter [and] those whose pursue a matter for the sake of the words."[85]

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81 Michel Foucault, *"Society Must Be Defended": Lectures at the Collège de France, 1975-1976*, transl. by David Macey, ed. by Mauro Bertani and Alessandro Fontana, New York: Picador, 2003, 183.

82 He was part of the progressive, liberal-nationalist movement of the *Vormärz* and most notably involved in the protest of the *Göttinger Sieben* as well as the work of the *Frankfurt Parliament* of which he was a member in 1848; cf. Horst Brunner, "Jacob Grimm (1785–1863)," in: *Wissenschaftsgeschichte der Germanistik in Porträts*, ed. by Christoph König, Hans-Harald Müller and Werner Röcke, Berlin / Boston: De Gruyter, 2012, 11–19.

83 This is, of course, a simplified account. For more detailed information on Lachmann's method and how he developed it, see Sebastiano Timpanaro, *The Genesis of Lachmann's Method*, transl. and ed. by Glenn W. Most, Chicago / London: University of Chicago Press, 2005 [originally published as *La genesi del metodo del Lachmann*, Firenze: Le Monnier, 1963].

84 This is not to say that Grimm was not interested in the *ächte lesart des gedichts* – the 'true reading of a poem' – because he very much was; the differences between Grimm and Lachmann appear more nuanced in retrospect than they may have done at the time; cf. Bein 2010, 72f.

85 Grimm 1864, 150, original: "Man kann alle philologen, die es zu etwas gebracht haben, in solche theilen, welche die worte um der sachen, oder die sachen um der worte willen treiben."

Grimm counted himself among the former and Lachmann among the latter.[86]

Regardless of these two men and their particular disagreements (that we will return to, for they are foundational for the theory of scholarly editing), history confirms that most disciplines will be subjected to a *Methodenstreit* sooner or later: an intradisciplinary 'dispute about methods'. Other examples for this include the *Methodenstreit* among German historians in the 1890s (Karl Lamprecht's socio-economic focus meeting the resistance of neo-Rankians prioritizing political and person-related history),[87] the *Methodenstreit* of national economics around the same time between the Austrian School and the Historical School (Carl Menger versus Gustav von Schmoller)[88] and the *Methodenstreit* in the German social sciences of the 1960s, culminating in the *Positivismusstreit* ('dispute about positivism') between scholars such as Karl Popper and Hans Albert on the one and Theodor W. Adorno and Jürgen Habermas on the other side.[89] While these examples are not exhaustive and cover only German-language academia,[90] they were prominent

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86 Ibid.

87 See George G. Iggers, "The 'Methodenstreit' in International Perspective: The Reorientation of Historical Studies at the Turn from the Nineteenth to the Twentieth Century," in: *Storia della storiografia* 6 (1984), 21–30. See also Hans Schleier, "Der Kulturhistoriker Karl Lamprecht, der ‚Methodenstreit' und die Folgen," in: *Karl Lamprecht: Alternative zu Ranke. Schriften zur Geschichtstheorie*, ed. by Hans Schleier, Leipzig: Reclam, 1988, 7–45.

88 See Mark Haller, "Mixing Economics and Ethics: Carl Menger vs Gustav von Schmoller," in: *Social Science Information* 43/1 (2004), 5–33. See also Jürgen Backhaus and Reginald Hansen, "Methodenstreit in der Nationalökonomie," in: *Zeitschrift für allgemeine Wissenschaftstheorie* 31 (2000), 307–336.

89 See David Frisby, "The Popper-Adorno Controversy: The Methodological Dispute in German Sociology," in: *Philosophy of the Social Sciences* 2/1 (1972), 105–119. See also Theodor W. Adorno [et al.], *Der Positivismusstreit in der deutschen Soziologie* (Soziologische Texte; vol. 58), Neuwied [et al.]: Luchterhand, 1969.

90 Aside from C. P. Snow's famous Rede lecture about "The Two Cultures" in 1959, the most well-known dispute that comes to mind where the Anglosphere is concerned are the 'science wars' of the 1990s, even though it is not quite clear whether they are at all comparable to the *Methodenstreite* under discussion here; and not simply because 'science wars' has a martial ring to it. First of all, they were not intradisciplinary but interdisciplinary. Second of all, it was mostly a backlash of natural scientists against 'postmodern' influences in the philosophy of science and cultural discourse in general (in the United States especially, targeted at French intellectuals) and as such much more politically and ideologically coloured (see Paul R. Gross and Norman Levitt, *Higher*

enough to introduce the German term into the English language.[91] Based on these examples, it stands to reason that the eventual emergence of a *Methodenstreit* and the subsequent consolidation of a dominant school of thought, even if only temporarily, might not be a prerequisite for the establishment of a discipline but could be proof of its formative anxieties.

When applied to a field such as the digital humanities, it becomes apparent that a comparable dispute has yet to take place. There is no *intra*disciplinary controversy that would come close to the historical examples in substance and scope. Instead, the disputes that exist are of an *inter*disciplinary nature – not within the digital humanities but between the digital humanities and the humanities; or rather, between subsets of the humanities and their digital counterparts, with the digital humanities serving as an intermediary platform.

One oft-cited example for this is Franco Moretti's introduction of *distant reading* into the portfolio of literary studies[92] – a deliberate contrast to the tradition of *close reading* as favoured by the likes of William Empson and Jacques Derrida.[93] With the advent of the mass digitization

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Superstition: The Academic Left and Its Quarrels with Science, Baltimore: John Hopkins University Press, 1994). Thirdly, it was arguably – partially – conducted in bad faith, regardless of the arguments on both sides. For more information (on the 'Sokal affair' that started the debate as well as the aftermath), see Ullica Segerstråle (Ed.), *Beyond the Science Wars: The Missing Discourse about Science and Society*, New York: State University of New York Press, 2000; Keith Ashman and Phillip Barringer (Eds.), *After the Science Wars: Science and the Study of Science*, London / New York: Routledge, 2001; Keith Parsons, *The Science Wars: Debating Scientific Knowledge and Technology*, Amherst, New York: Prometheus Books, 2003; Martin Carrier [et al.] (Eds.), *Knowledge and the World: Challenges Beyond the Science Wars*, Berlin: Springer, 2004. See also Jan Faye, *After Postmodernism: A Naturalist Reconstruction of the Humanities*, Basingstoke [et al.]: Palgrave Macmillan, 2012, 15–19.

91 Although usually to denote the German disputes specifically. Cf. e.g. the entry about 'Methodenstreit,' in: *A Dictionary of the Social Sciences*, ed. by Craig Calhoun, Oxford [et al.]: Oxford University Press, 2002, 307; note, however, that the entry makes mention of Wilhelm Windelband's distinction between different sciences – only the man is called "Wildebrand" (ibid.). In all fairness, it sounds even more 'German' than his actual name.

92 See Franco Moretti, *Distant Reading*, London [et al.]: Verso, 2013.

93 For one of the early formative works of the movement, see William Empson, *Seven Types of Ambiguity: A Study of Its Effects in English Verse*, London: Chatto and Windus, 1930. Derrida's *Ulysse Gramophone* is often cited as well as a famously extreme example for a close reading exercise (being a lengthy exploration of the word 'yes' in James Joyce's *Ulysses*); see Jacques Derrida, *Ulysse gramophone: deux mots pour Joyce*, Paris:

of books and concurrently the mass availability of texts, extracted via OCR or some other automated process, the focus naturally shifts towards finding ways to harness this material by exploring quantitative questions.[94] The list of measures includes network analysis[95] and topic modelling.[96] But while the computationally aided search for patterns and

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Ed. Galilée, 1987. However, as Alan Liu has pointed out and as should be stressed, 'close reading' cannot be equated with only one type of close reading. Different schools in different countries developed a variety of close reading theories over the years (British, American, French, and so on) and even the one that is usually meant in the American context, the *New Criticism* school with its roots in Tennessee, i.e. the writings of John Crowe Ransom, developed in rather specific conditions and describes a rather specific tradition of close reading; cf. on this topic Alan Liu, "Humans in the Loop: Humanities Hermeneutics & Machine Learning," closing keynote at the *DHd2020* conference, Paderborn, Germany, 2–6 March 2020, online: <https://www.youtube.com/watch?v=l-nfeOUBCi3s> (video recording, accessed 1 September 2023).

94 Although we should always be mindful of the fact that quantitative studies were undertaken in the humanities long before. For the German context, see Toni Bernhart, "Quantitative Literaturwissenschaft: Ein Fach mit langer Tradition?" in: *Quantitative Ansätze in Literatur- und Geisteswissenschaften: Systematische und historische Perspektiven*, ed. by Toni Bernhart [et al.], Berlin / Boston: De Gruyter, 2018, 207–220, online: <https://doi.org/10.1515/9783110523300-009>, and Michael Buchner [et al.], "Zur Konjunktur des Zählens – oder wie man Quantifizierung quantifiziert: Eine empirische Analyse der Anwendung quantitativer Methoden in der deutschen Geschichtswissenschaft," in: *Historische Zeitschrift* 310/3 (2020), 580–621, online: <https://doi.org/10.1515/hzhz-2020-0019>.

95 Just by way of example, see Cornell Jackson, "Using Social Network Analysis to Reveal Unseen Relationships in Medieval Scotland," in: *Digital Scholarship in the Humanities* 32/2 (2017), 336–343, online: <https://doi.org/10.1093/llc/fqv070>, and David Brown, Adriana Soto-Corominas and Juan Luis Suárez, "The Preliminaries Project: Geography, Networks, and Publication in the Spanish Golden Age," in: *Digital Scholarship in the Humanities* 32/4 (2017), 709–732, online: <https://doi.org/10.1093/llc/fqw036>. It is worth bearing in mind that historical network analysis did not originate from the digital humanities nor is it exclusive to it. See Marten Düring and Linda von Keyserlingk, "Netzwerkanalyse in den Geschichtswissenschaften. Historische Netzwerkanalyse als Methode für die Erforschung von historischen Prozessen," in: *Prozesse: Formen, Dynamiken, Erklärungen*, ed. by Rainer Schützeichel and Stefan Jordan, Wiesbaden: Springer Fachmedien Wiesbaden, 2015, 337–350, and Marten Düring and Martin Stark, "Historical Network Analysis," in: *Encyclopedia of Social Networks* (vol. 2), ed. by George A. Barnett, London: Sage Publishing, 2011, 593–594. See also the entire field of prosopography, e.g. Katherine S. B. Keats-Rohan (Ed.), *Prosopography Approaches and Applications: A Handbook*, Oxford: Prosopographica et Genealogica, 2007.

96 Just by way of example, see Christof Schöch, "Topic Modeling Genre: An Exploration of French Classical and Enlightenment Drama," in: *Digital Humanities Quarterly* 11/2 (2017), online: <http://www.digitalhumanities.org/dhq/vol/11/2/000291/000291.html> (accessed 13 January 2023), and Jeffrey M. Binder and Collin Jennings, "Vis-

clusters is not an affront against the conception of scholarship,[97] its more or less explicit claim of being the superior method to "uncover the true scope and nature of literature"[98] is bound to clash with the view that literature must be understood both in its context *and* in its peculiarity.

The *Methodenstreit*, in this case, is a dispute between disciplines where the discipline of literary studies already offers a great variety of methods apart from close reading[99] (even though traditional scholarship is often equated to it in these contexts), and the digital humanities appear to offer only one method, or rather one set of methods: those that computer science has designated for the use on large text corpora; and it does so in a way that purposefully challenges the status quo by declaring it to be inferior or suggesting that it is, at the very least, insufficient.[100]

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ibility and Meaning in Topic Models and 18th-Century Subject Indexes," in: *Digital Scholarship in the Humanities* 29/3 (2014), 405–411, online: <https://doi.org/10.1093/llc/fqu017>.

97 Given that literary studies have long worked with categorizations and classifications, trying to group works into genres, movements, eras, sentiments, et cetera. On this topic, see David Perkins, "Literary Classifications: How Have They Been Made?" in: *Theoretical Issues in Literary History* (Harvard English Studies; vol. 16), ed. by David Perkins, Cambridge, Massachusetts / London: Harvard University Press, 1991, 248–267.

98 Kathryn Schulz, "What Is Distant Reading?" in: *The New York Times* (24 June 2011), online: <https://www.nytimes.com/2011/06/26/books/review/the-mechanic-muse-what-is-distant-reading.html> (accessed 12 January 2023). A version of this article appeared in print, 26 June 2011, on Page BR14 of the 'Sunday Book Review' with the headline: "Distant Reading."

99 Especially in academic traditions outside of the English-speaking world (e.g. the *Sozialgeschichte der Literatur* in German literary studies). The international diversity of the issue cannot be emphasized enough (and thinking beyond a 'Western'-centric assumption of what literature is and how it can be analysed would reveal even greater disparities). But even so, there were, of course, influential counter-movements to close reading where it was practiced as well, such as the *New Historicism* movement in the USA. In connection with the latter, see also Alan Liu, *Local Transcendence: Essays on Postmodern Historicism and the Database*, Chicago / London: University of Chicago Press, 2008.

100 Moretti admits as much in several places of his work, such as: "It is a double lesson, of humility and euphoria at the same time: humility for what literary history has accomplished so far (not enough), and euphoria for what still remains to be done (a lot)." (Franco Moretti, *Graphs, Maps, Trees: Abstract Models for a Literary History*, London [et al.]: Verso, 2005, 2.) In her *New York Times* critique of his work, Kathryn Schulz interprets his intentions negatively and writes that Moretti "has suggested that distant reading should supplant, not supplement, close reading." (Schulz 2011.) This view was, at the very least, then, one presented to the interested public.

Therein lies a central theme that the presence of computing reinforces in the humanities: the need to justify their non-computational methods. But that pressure to defend their right to exist is not novel in itself. Amongst themselves as well as amongst the wider range of sciences, the humanities have often had to defend their methods against accusations pertaining to, for example, a lack of empirical evidence or even scientific significance to begin with.[101]

Such debates are a consistent background noise throughout the ages but cyclical in nature when pushing to the foreground; a reversion of dominant principles that we might call, since Thomas Kuhn's seminal work on the topic, paradigm shifts.[102] These movements can be traced not just by focusing on the variety of turns that have been postulated in or across disciplines (e.g. linguistic turn, cultural turn, spatial turn, etc.) but by sketching the broader strokes of intellectual history: romanticism followed by formalism, structuralism followed by poststructuralism, and so on. Since the change of guard is instigated as a reaction to what came before and cycles back to its pre-predecessor, it must, in a way, share similar sentiments every other time in the cycle. Similar sentiments, not identical sentiments. These similarities may rest in the type of primal dichotomies we have already identified as cause for contention: the formal versus the informal, the exact versus the inexact. It stands to reason that the detection of inadequacies with a given approach propels detractors to seek refuge in the opposite direction and each time this happens, the arguments grow more sophisticated and, arguably, convoluted, until the long-time trajectory becomes obscured by the difficulty to arrange it in a neat line.

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101 This perceived lack of 'scientificity' is also well-illustrated in a digital humanities context in an announcement of a conference on *Modelling Vagueness and Uncertainty in DH* that reads: "Digital Humanities (DH) aims not only to archive and make available materials (in particular historical artefacts) but also to introduce a better scientific reflexion into humanities by propagating computational methods." (Cf. the conference website under the section 'About', <https://www.inf.uni-hamburg.de/inst/dmp/hercore/publications/vaguenessuncertainty2020.html> (accessed 12 January 2023); the conference was organized by the University of Hamburg, 9–10 July 2020.)

102 For a more nuanced discussion, see Andrea Sakoparnig, Andreas Wolfsteiner and Jürgen Bohm (Eds.), *Paradigmenwechsel: Wandel in den Künsten und Wissenschaften*, Berlin / Boston: De Gruyter, 2014.

In the case of the digital humanities, if there are constants, they are further obscured by a sense of disciplinary discontinuity; while there may not have been a clean break along the year of 2005, it marks, as is well-known, the renaming of the field from 'humanities computing' to 'digital humanities'[103] which resulted in an expansion into a 'big tent' of differing definition[104] and the impression among non-specialists that the field constitutes a recent phenomenon.[105] In handbooks, the history of

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103 This change of name to 'digital humanities' has even been referred to as "the name being given to this field, calling it into existence" (Robert Scholes and Clifford Wulfman, "Humanities Computing and Digital Humanities," in: *South Atlantic Review* 73/4 (2008), 50–66, here 51).

104 This is especially pronounced in the definitions gathered from a variety of practitioners during the 'Day of Digital Humanities' initiative, cf. "Selected Definitions from the Day of Digital Humanities: 2009–2012," in: *Defining Digital Humanities: A Reader*, ed. by Melissa Terras, Julianne Nyhan and Edward Vanhoutte, Farnham, Surrey [et al.]: Ashgate, 2013, 279–287. As for the 'big tent' metaphor, cf. Melissa Terras, "Peering Inside the Big Tent," in: *Defining Digital Humanities: A Reader*, ed. by Melissa Terras, Julianne Nyhan and Edward Vanhoutte, Farnham, Surrey [et al.]: Ashgate, 2013, 263–270; Patrick Svensson, "Beyond the Big Tent," in: *Debates in the Digital Humanities*, ed. by Matthew K. Gold, Minneapolis: University of Minnesota Press, 2012, 36–49; and Patrick Svensson, *Big Digital Humanities: Imagining a Meeting Place for the Humanities and the Digital*, Ann Arbor: University of Michigan Press, 2016.

105 William Pannapacker's reaction to the 2009 convention of the Modern Language Association (MLA) and his verdict that "the digital humanities seem like the first 'next big thing' in a long time" are notorious by now; he also noted that "the sessions are well attended but not usually packed, like celebrity panels -- perhaps the field is still too emergent" (William Pannapacker, "The MLA and the Digital Humanities," in: *The Chronicle of Higher Education* (28 December 2009), online: <https://web.archive.org/web/20100102214032/http://chronicle.com/blogPost/The-MLAthe-Digital/19468/> (accessed 4 October 2020; specifically accessed in this archived version from 2 January 2010 since the link was already broken while writing this book)). At the same time, he did acknowledge that "[t]here are, of course, many pioneering digital humanists who have been laying the groundwork for the current transformation for decades" (ibid.). Such an observation is necessarily grounded in a certain familiarity with the subject. William Pannapacker furthermore conceded, in a later blog post, that in response to his declaration of the digital humanities as the "'next big thing' […] the digital humanists were indignant because they've been doing their thing for more than 20 years (and maybe even longer than that)" and he also noted "from experience that there are plenty of people in the profession who know little about this established field and even regard it with disdain as something disturbingly outré and dangerous to the mission of the humanities" (William Pannapacker, "Digital Humanities Triumphant?" in: *The Chronicle of Higher Education* (8 January 2011), online: <http://chronicle.com/blogs/brainstorm/pannapacker-at-mla-digital-humanities-triumphant/30915> [reprinted in *Debates in the Digital Humanities*, ed. by Matthew K. Gold, Minneapolis: University of Minnesota Press, 2012, 233–234]). The pervasive notion of a future-facing and

humanities computing may be recounted in the form of the canonized founding myth with its 'founding father' Roberto Busa SJ but even that concession to tradition assumes the mantle of a certain kind of entrepreneurial imagination of self – and it has been challenged in most recent years, of course.[106] The established canon of research literature is not as comprehensive as the popularity of the field might suggest and it rarely appears to take literature into account that was produced in non-English-speaking countries as well as adjacent disciplines in the latter half of the 20th century, such as cybernetics. The pace of evolving technologies may also be a factor in this.

Whatever the reason, we can consequently observe that few have so far explicitly sought to draw a line from other intellectual movements in the humanities, such as the aforementioned structuralism, to the digital humanities as themselves a manifestation of an intellectual movement. James E. Dobson has done so in his book *Critical Digital Humanities: The Search of a Methodology* (2019) where he examines the digital humanities specifically as a form of return to structuralist thought,[107] but as Evelyn Gius notes in her review of his study:

> Since the debate as to whether structuralist or post-structuralist approaches should be the basis for digital humanities analyses is not an intrinsic digital humanities debate, it was not regarded as decisive for the discussion of the critical digital humanities. Even though the debate has been fueled by (mainly academic) developments in digital humanities, there is no compelling connection between digital humanities and (neo-)structuralism. At least not beyond the fact, also mentioned by Dobson, that structuralist approaches can be more easily computationally modelled. […] Additionally, without the

history-sparse digital humanities can also be found, in a slightly different configuration, in publications within the field itself, such as when James E. Dobson mentions "[t]he history of the digital humanities, brief as this history is at present" (James E. Dobson, *Critical Digital Humanities: The Search for a Methodology*, Urbana, Illinois: University of Illinois Press, 2019, 1).

106 Such as when it comes to the labour of Busa's female workforce; see Julianne Nyhan, *Hidden and Devalued Feminized Labour in the Digital Humanities: On the Index Thomisticus Project 1954-67*, London / New York: Routledge, 2022.

107 Cf. Dobson 2019, esp. 57–65.

> objection of structuralism, the requirements for the critical digital humanities are higher: If the reference to structuralist approaches is no longer sufficient to criticize an approach, other, more elaborate criteria, must be adopted for digital humanities criticism.[108]

It is true, or at least would intuitively appear to be true, that levelling an 'accusation' of structuralism at the digital humanities does not in itself constitute a very meaningful critique. However, there are two aspects to this that Gius in turn does not seem to take into account: First of all, an observation that the digital humanities are in spirit or practice more oriented towards structuralist and formalist approaches from the past than post-structuralist approaches does not have to be formulated as a criticism or critique, even if Dobson employed it for that purpose; an observation can be, *prima facie*, an observation, first and foremost, that merely situates the digital humanities, insofar as it is possible to do that for an interdisciplinary and international field of activity, within a broader historizing, i.e. analytical descriptive, view of academic developments and movements of thought. Second of all, that observation, with as many caveats as one might want to apply in order to preserve some nuance, is not as trivial as Gius makes it seem, nor must it prove to be a perfect reincarnation or conscious effort of brokered continuation to be informative as to certain kinds of *alignment* of thought, *dominance* of thought, and *tradition* of thought, all of which are of great relevance when it comes to the epistemological – which is also to say, political, economic, social – conditionality of research.

Why, then, might the digital humanities be seen as a manifestation of an intellectual movement within the humanities as well as tangent to the humanities? And why, specifically, might the digital humanities be referred to as neo-structuralist in essence? Because – and I state this with all the caution that must accompany generalizations of this sort – they operate on two implicit premises: (1) the premise that objects of study

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108 Evelyn Gius, "Digital Humanities as a Critical Project: The Importance and Some Problems of a Literary Criticism Perspective on Computational Approaches," review, in: *Journal of Literary Theory* (24 January 2020), online: <http://nbn-resolving.de/urn:nbn:de:0222-004298>.

from the humanities can be analysed in a structured way; and (2) the premise that knowledge in or, more specifically, information from the humanities can be expressed in a structured or formal way. This statement hinges, of course, on a host of assumptions as to what constitutes 'knowledge', 'structures', 'humanistic objects of study' and so on. However, I would posit that computation or rather computing, as associated with commands, loops, variables, logical assertions of a mathematical kind, sequences of instruction, et cetera, to name but a few randomly chosen notions, is seen to be subject to an *operationality* that someone involved in the digital humanities cannot simply reject as a base or perhaps even *the* base of the *conditionality* of their research; hence the ongoing discussion about the operationalization and formalization of humanistic questions and 'knowledge' in the digital humanities – or, put slightly differently, about their operationalizationability and formalizationability.[109] When looking at digital humanities literature and discourse in general, one could arrive at the conclusion that without accepting the *likelihood* of these premises or without accepting their *boundedness* to one's own premises of research, one cannot practice digital humanities. The alternative would be to continuously 'fail' in practicing them and thereby, if not prove the premises listed above, prove that not adhering

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109 See Axel Pichler and Nils Reiter, "From Concepts to Texts and Back: Operationalization as a Core Activity of Digital Humanities," in: *Journal of Cultural Analytics* 7/4 (2022), online: <https://doi.org/10.22148/001c.57195>. References to 'operationalization' – or *Operationalisierung* – are ubiquitous in German digital humanities literature; see, by way of example, the section on 'formalization and operationalization' in Andrea Rapp, "Manuelle und automatische Annotation," in: *Digital Humanities: Eine Einführung*, ed. by Fotis Jannidis, Hubertus Kohle and Malte Rehbein, Stuttgart: J.B. Metzler, 2017, 253–267, here 255–257, or articles such as Anton Fuxjäger, "Wenn Filmwissenschaftler versuchen, sich Maschinen verständlich zu machen: Zur (mangelnden) Operationalisierbarkeit des Begriffs 'Einstellung' für die Filmanalyse," in: *Maske und Kothurn* 55/3 (2009), 115–128. The discussion is not, however, an exclusively German one, of course. See, for example, R. C. Alvarado, "Digital Humanities and the Great Project: Why We Should Operationalize Everything—and Study Those Who Are Doing So Now," in: *Debates in the Digital Humanities 2019*, ed. by Matthew K. Gold and Laura F. Klein, Minneapolis: University of Minnesota Press, 2019, 75–82, and Franco Moretti, "'Operationalizing': or, The Function of Measurement in Modern Literary Theory," in: *Pamphlets of the Stanford Literary Lab* 6 (2013), or Franco Moretti and Leonardo Impett, "Totentanz: Operationalizing Aby Warburg's Pathosformeln," in: *Pamphlets of the Stanford Literary Lab* 16 (2017) [both issues online: <https://litlab.stanford.edu/pamphlets/> (accessed 12 January 2023)].

to them does not produce the desired result (either, depending on the case).[110] In a different view, the view wherein the digital humanities refer

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110 A further note of personal argumentation: I will acknowledge that I have received criticism for the position I am taking here and it may indeed be lacking in nuance, so I want to elaborate on it: The criticism was that it is possible to practice digital humanities research without any preconceived notion that it may lead to the computation of material from the humanities and that this research might just as well be interested in finding out what *cannot* be computed as it may be in finding out what can be computed. I do not disagree that this is true but it is beside the point. The predominant goal of digital humanities research as specified above is to find out how something can be computed, not how it cannot be computed. If the result is that it cannot be computed, that is a 'failure' which does not mean that that result is not of interest; quite the opposite. Something can be learned from failure and in that sense, it might even be of greater interest than a different result. I may also be persuaded to not speak of 'failure' or 'success' as I myself think these terms are not very apt to describe research results one way or the other (see also my article on the topos of 'failure' in the digital humanities which I, in fact, spun out of this very footnote: Tessa Gengnagel, "Vom Topos des Scheiterns als konstituierender Kraft: Ein Essay über Erkenntnisprozesse in den Digital Humanities," in: *Fabrikation von Erkenntnis: Experimente in den Digital Humanities* (Zeitschrift für digitale Geisteswissenschaften; special vol. 5), ed. by Manuel Burghardt [et al.], Wolfenbüttel: Forschungsverbund MWW, 2022, online: <https://doi.org/10.17175/sb005_011>). The reason I speak of 'failure' in this case is that I want to emphasize that there usually *is* an expectation of a tangible outcome (a digital edition, database, visualization etc.) outside of the literature produced about the research – that is a major difference to traditional humanistic research. On the conversational presence of 'failure' in the digital humanities, one might want to consult John Unsworth, "Documenting the Reinvention of Text: The Importance of Failure," in: *Journal of Electronic Publishing* 3/2 (1997), online: <https://doi.org/10.3998/3336451.0003.201>, and his opening statement: "If an electronic scholarly project can't fail and doesn't produce new ignorance, then it isn't worth a damn." He then refers to Karl Popper's famous theses and stresses "the importance – the utility – of what we do know and, on the other hand, the ephemeral, contingent, transitional character of that knowledge – and therefore, the need for experiment, the indispensability of mistakes, and the necessity of recognizing, documenting, and analyzing our failures" (ibid.). That is all well and true. However, there is a difference between finding yourself able to compute something or unable to do so: If you are able to compute something in the way you want to do it, in this given context, you have thereby proven one of the two proposed premises that the digital humanities rest upon to be reasonably well-assumed, as the basic machination of proceedings relies on them. (The question then becomes whether what you did was methodically sound and produced valuable findings but that is a question for every researcher to answer in everything they do.) If you are unable to compute something in the way you want to do it, all you will have proven is that you were personally unable to do so, not that is impossible in principle or even in practice. The value of learning how to compute something is self-evident when the goal is the act of computation itself (in the first degree of a scholarly project, not necessarily its final objective), whereas the value of learning how not to compute something is nebulous at best, outside of using that knowledge to better learn how to compute something or one day arrive at a point where it may be computed

to the humanities 'existing' in the digital age in a broad sense without either of those premises at their core or even periphery, that tension is solved by definition.

Whether the mere *groundedness* of digital humanities research in matters of *structuring* (classification, disambiguation, pattern recognition, and so on) is enough to declare them as neo-structuralist with specific reference to the theories and concepts developed by structuralists and semioticians such as Ferdinand de Saussure and Claude Lévi-Strauss would be its own research question and require a much more nuanced debate and examination of structuralist as well as post-structuralist precursors to digital humanities theory-building; and the purpose of making such an argument would also have to be explained further.[111] But if we proceed from the above assumption, then it follows that there cannot be a *Methodenstreit* within the digital humanities about the very premises that the methodology rests upon. They can be struggled against, however futile that struggle might be, but they cannot be discarded in favour of a principle championing an informal, inexact Grimmian approach. They

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even if it may not yet. Those two opposing outcomes are therefore fundamentally different in how they relate to the stated premises, which is a different difference than the difference in how they can inform a researcher in their work. I am not claiming that the digital humanities are out to prove their own premises or even able to do so but it is my observation that without genuinely believing that those premises *can* be true or, alternatively, without believing that an account of their 'truthfulness' must be disregarded or sublimated through some other kind of argument engaging with them, no research can be conducted in the digital humanities; at least not in the way that a lot of research in the digital humanities is being conducted as of this moment, an important distinction.

111 That this debate would have to be quite involved is evidenced by the fact that most of the French so-called 'post-structuralists' rejected the label which must be something either not known to or otherwise ignored by those who insist on talking about 'structuralists and post-structuralists' or 'structuralists vs. post-structuralists' without at least acknowledging that caveat; cf. Johannes Angermuller, *Why There Is No Post-structuralism in France: The Making of an Intellectual Generation*, London: Bloomsbury Academic, 2015. Manfred Frank introduced the term 'neo-structuralism' to refer to what others call post-structuralism which is something else that would have to be discussed if one wanted to label the digital humanities as 'neo-structuralist;' see Manfred Frank, *Was ist Neostrukturalismus?* (Edition Suhrkamp; vol. 1203), Frankfurt am Main: Suhrkamp, 1984. See also his more recent reflection in Manfred Frank, "Was ist Neostrukturalismus? Derridas sprachphilosophische Grundoperation im Ausgang vom klassischen Strukturalismus," in: *Handbuch der Kulturwissenschaften* (vol. 2: Paradigmen und Disziplinen), ed. by Friedrich Jaeger and Jürgen Straub, Stuttgart: J.B. Metzler, 2011, 364–376.

position themselves against that by the very fabric of their functionality. In a sense – an important sense –, the *instrumentarium* is fixed. The essence of these instruments cannot be debated. Any such debate would be a debate for computer science and even then, what would that be?

If there is to be a *Methodenstreit* in the digital humanities, it has to be about the methods *as they relate to the subject they are applied to*.[112] The results yielded by the used methods cannot be divided from the methods, and the materials they were used on cannot be divided from the results. Thus, the point of contention shifts towards the value of these results. In that regard, the burden of proof lies with the digital humanities – not with the humanities that came before, even if someone were to think that the humanities had never produced any worthwhile result throughout their whole history via the application of 'traditional' methodologies.[113]

As for the debate surrounding *distant reading*, Moretti conceded in 2006, shortly after the release of his book *Graphs, Maps, Trees* and in response to a critique levelled at it by Christopher Prendergast, that "a good method should prove itself by producing interesting findings"[114] and that the methods introduced in his book had yielded "few concrete results"[115] up to that point, much to his own chagrin.[116] He voiced his

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112 Michael Piotrowski and Mateusz Fafinski make a very similar point when they state that "the methods […] first and foremost must be adequate for the research object and the research question" (Michael Piotrowski and Mateusz Fafinski, "Nothing New Under the Sun? Computational Humanities and the Methodology of History," in: *Proceedings of the Workshop on Computational Humanities Research*, ed. by Folgert Karsdorp [et al.], Amsterdam, 2020, 171–181, here 178).

113 Since many, although certainly not all, digital humanists – or those who identify themselves as such – seem to have originally studied a 'traditional' discipline from the humanities, such an extreme position would be surprising but it is not entirely inconceivable. The pertinent question being, of course, whether there is any kind of methodology in the digital humanities that does not have a precursor in 'traditional methodology', even if only in spirit.

114 Moretti 2013, 139. From the essay "The End of the Beginning: A Reply to Christopher Prendergast" as originally published in *New Left Review*, September/October 2006.

115 Ibid.

116 He essentially repeated that sentiment ten years later, in an interview with the German news magazine *Der Spiegel*. He said: "Right now everyone is working with diagrams, graphs, networks, lists. But often what's published is only a torrent of facts – and the explanation behind it is mundane, without scholarly depth. I hope that that's only an

disappointment at having nothing to offer but a "methodological reply"[117] and quoted Lucio Colletti's sentiment that "methodology is the science of those who have nothing."[118]

If divorced from any application, that would ring true. However, the same might be true in reverse: That *application without methodology is the science of those who will have nothing*. Methodology, in this case, meaning a methodology that is consciously and sufficiently reflected – for there is always some underlying methodology, of course, as there is always some implied application even with those who allegedly practice nothing but methodology. The latter might lack the findings but the former lack the framework with which to give them meaning; systematically relevant meaning.

D.
FUNDAMENTALS OF TEXTUAL CRITICISM

We could, at this point, re-focus our attention on modelling as a methodology in the digital humanities and deepen the thoughts that have only been sketched very broadly so far. The concern of this book is not, however, a purely methodological one. If we take the idea that we need to understand our methods *as they relate to the subject they are applied to* seriously, then we need to stay with Jacob Grimm and Karl Lachmann for a moment longer. I did not choose to highlight their particular *Methodenstreit* frivolously. Any consideration of editorial theory has to begin at the start, and while it may not be required to recall these histories in certain contexts of expertise, it is my impression that any interdisciplinary book such as this one benefits from laying the groundwork.

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issue of growth and that soon, more critical perspectives will follow. […] The data hasn't produced a real Eureka moment yet. Its quality isn't as high as hoped: because the field of research is still young and the few people that work in it have to do so with modest means." (Franco Moretti, "Als ob ich die Literatur an Barbaren verrate," interview by Anne Haeming, in: *Spiegel Online* (6 June 2016), online: <http://www.spiegel.de/kultur/literatur/franco-moretti-als-ob-ich-die-literatur-an-barbaren-verrate-a-1096078.html> (accessed 12 January 2023).)

117 Moretti 2013, 139.

118 Ibid.

Incidentally, laying the groundwork is exactly what Grimm and Lachmann were doing – what all those philologists, librarians, and cultural historians were doing in the 19th century, when the modern-day humanities emerged.[119] With respect to Germany one could put it thusly: In the beginning of the *Geisteswissenschaften*, there was the *Germanistik*. And in the beginning of the *Germanistik*, there was the *Textkritik*. That tradition is still felt today.[120]

If there is one fundamental dependence in the humanities, it is the dependence on scholarly editions – this is true for the historical disciplines, the philologies, and musicology. The only exception to this are the disciplines wherein there is neither a primacy of text-based hermeneutics nor a primacy of other notation systems; so, in effect, the disciplines that are concerned with imagery, such as art history, or multimedia, such as film studies.

The need for scholarly editions arises from the unstable transmission of documents (or, more broadly speaking, material evidence). This lack

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119 Cf. "If we had not had a transmission of classical texts in the Middle Ages and at the beginning of early modern times, we would not have had a foundation to teach any lessons. Therefore, the texts and their quality of transmission play a decisive role in many ways in the prehistory of the humanities as well as in the transformation that occurs around 1800 because of the creation of the modern humanities." (Søren Kjørup, *Humanities – Geisteswissenschaften – Sciences humaines: Eine Einführung*, transl. by Elisabeth Bense, Stuttgart / Weimar: J.B. Metzler, 2001, 27, original (German translation): "Hätte man im Mittelalter und zu Beginn der Neuzeit keine überlieferten klassischen Texte gehabt, hätte es für das Vermitteln von ‚Lehren' keine Grundlage gegeben. Die Texte und die Qualität ihrer Überlieferung spielen daher in vieler Hinsicht die entscheidende Rolle in der Vorgeschichte der Geisteswissenschaften, wie auch bei der Umwälzung, die sich um 1800 durch Schaffung der modernen Geisteswissenschaften vollzieht.")

120 As noted, this only pertains to the 'modern' humanities as they formed in the 19th century; and if one were to reach further into the history of textual scholarship, biblical exegesis as well as figures such as Jean Mabillon would have to be discussed, of course. For one such tracing of textual scholarship throughout time, see David Greetham, "A History of Textual Scholarship," in: *The Cambridge Companion to Textual Scholarship*, ed. by Neil Fraistat and Julia Flanders, Cambridge: Cambridge University Press, 2013, 16–41 (Mabillon is only briefly mentioned, cf. ibid., 29). Furthermore, we could also say: In the beginning of the *Geisteswissenschaften*, there was the *Geschichtswissenschaft*. Or the *Altertumswissenschaften*. We would not be wrong, since all of these disciplines developed in parallel as well as in conjunction with each other; something that might be difficult to imagine in an ever-increasingly specialized academia. *Editionswissenschaft* ('editorial theory' or 'science'), for example, is, in the traditional German sense, often grouped as a *historische Hilfswissenschaft* or *Grundwissenschaft* ('auxiliary historical science').

of stability is not restricted to handwritten transmission but certainly aggravated by the practice, resulting in various *witnesses* of a work due to the manual process of copying. Subsequently, scholarly editions traditionally focus on materials that have survived from ancient, medieval, and early modern times – the pre-print age, so to speak, although printing and handwriting have continued to co-exist which is one of the reasons, but not the only reason, why scholarly editions are still required for materials up to and including the 20th century; and one imagines the need for scholarly editions will continue and come to include born-digital documents. Editions of modern materials often either curate a certain type of document within a certain context, such as letter editions related to figures deemed historically relevant,[121] or they trace the genesis of a literary work within the notes and manuscripts of a single author.[122] A different type of edition of modern material prioritizes the scholarly annotation of a work for educational and societal purposes, even if it was transmitted in printed and thus relatively stable form.[123]

The edition of handwritten materials, however, arguably accounts for most scholarly editions in a European context, be they historical-critical, genetic, or of another variety. In this regard, the aforementioned Karl Lachmann still looms large, although he has been dead for over 150 years. Soon after his death, scholars already anticipated the lasting impact that his methodology would have even though he himself never elaborated on it,[124] rather establishing it through his editions that

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121 Such as the ongoing edition of Johann Wolfgang von Goethe's letters (first volume in two parts: Johann Wolfgang von Goethe, *Briefe: Historisch-kritische Ausgabe. 23. Mai 1764–30. Dezember 1772*, ed. by Elke Richter and Georg Kurscheidt, Berlin: Akademie-Verlag, 2008).

122 Such as James Joyce, *Ulysses* (vol. 1–3), ed. by Hans Walter Gabler, New York: Garland, 1984.

123 Such as the scholarly edition of Adolf Hitler, *Mein Kampf*, ed. by Christian Hartmann [et al.], München [et al.]: Stiftung zur wissenschaftlichen Erforschung der Zeitgeschichte, 2016. See also, for information about the design of the edition, Moritz Ahrens and Christopher Busch, "Editionsphilologie und inszenierende Typographie: Eine praxeologische Perspektive auf die Mein-Kampf-Edition des Instituts für Zeitgeschichte," in: *editio* 32/1 (2018), 119–136, online: <https://doi.org/10.1515/editio-2018-0009>.

124 Paul Maas is commonly cited as co-founding the field of *textual criticism* and putting the methodology that was prevalent at the time into writing; see Paul Maas, *Textkritik*, Leipzig: Teubner, 1927.

he created out of materials from wildly different eras as was custom when the disciplines were not as clearly demarcated as they are today. Examples for editions of his include the writings of ancient authors such as Lucretius and Catullus;[125] the medieval writings of Walther von der Vogelweide and Wolfram von Eschenbach;[126] and the early modern writing of Gotthold Ephraim Lessing.[127] As one of the 'founding fathers' of *textual criticism*, his principles were as rigorous as they were seminal. To elaborate on what I had only indicated earlier: His aim was to establish an edited text that adhered as closely as possible to a supposedly lost but once extant *Urtext*. He sought to achieve this by surveying the surviving manuscripts in which a given text or fragments thereof had been transmitted and then ordering them in a genealogical tree, the so-called *stemma*. 'Contaminations' occurring the further a manuscript strayed from the *archetype* were to be purged – the language to be standardized[128] – and the authorial intentions to be laid bare. Rens Bod, a key figure in the emerging field of the 'history of the humanities' whose scholarship we will have to discuss in **CHAPTER II**, has gone so far as to state that "[s]temmatic philology is possibly the most successful

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125 See Titus Lucretius Carus, *De Rerum Natura Libri Sex*, ed. by Karl Lachmann, Berlin: G. Reimer, 1850. See also Gaius Valerius Catullus, *Q. Valerii Catulli Veronensis liber*, ed. by Karl Lachmann, Berlin: G. Reimer, 1829. [Note that the name of Karl Lachmann is latinized in the editions and appears as Carolus Lachmannus. The same is true for other bibliographic data such as Berlin being called Berolini etc.]

126 See Karl Lachmann (Ed.), *Die Gedichte Walthers von der Vogelweide*, Berlin: G. Reimer, 1827. See also Karl Lachmann (Ed.), *Wolfram von Eschenbach*, Berlin: G. Reimer, 1833.

127 See Karl Lachmann (Ed.), *Gotthold Ephraim Lessings sämmtliche Schriften* (vol. 1–13), Berlin: Voß, 1838–1840.

128 The most illustrative example for this is his invention of an artificial *Normalmittelhochdeutsch* (or *normalisiertes Mittelhochdeutsch*) that German scholars are highly critical of nowadays since it is ahistorical in nature and obscures the great linguistic variety that existed before there ever existed a standardized German, cf. Weigel 1989, 171f. See, for further reading on the matter, Karl Stackmann, "Die Edition – Königsweg der Philologie?" in: *Methoden und Probleme der Edition mittelalterlicher deutscher Texte* (editio / Beihefte; vol. 4), ed. by Rolf Bergmann [et al.], Tübingen: Niemeyer, 1993, 1–18, online: <https://doi.org/10.1515/9783110941647.1>; see also Joachim Heinzle, "Zur Logik mediävistischer Editionen: Einige Grundbegriffe," in: *editio* 17 (2003), 1–15, online: <https://doi.org/10.1515/9783484604544.1>.

humanistic discipline"[129] – a statement that must be attributed to his selective perception in seeing the purpose of the humanities in their search for patterns, of which stemmatology is, without doubt, one of the purest examples.

Wilhelm Scherer, an Austrian philologist, remarked in a review of Lachmann's writings in 1876:

> Lachmann died in 1851 but he continues to live amongst us in the most wonderful way. He is beloved and hated as if he were present and working. [...] How come that this distinguished scholar is not granted his well-deserved peace in death? [...] In any case, the main reason is Lachmann's own personality. He impresses, indeed. [...] Every word that hails from his quill conveys the impression of the true, of the laboriously acquired and of that which is derived from a strong conviction.[130]

I quote and translate this part here because it may be of interest to those who keep invoking Lachmann's name as a counterpoint in current debates about digital scholarly editions. After extolling the virtues of Lachmann, Scherer returns to the controversy surrounding his methods and adds as his final verdict:

> Should it not also be part of the work ethic of the scholar that he be aware of the theoretical justification of the methods that he seeks to work with? The demand is made so rarely in the humanities that it can hardly be cause for reproach against the indi-

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129 Rens Bod, *A New History of the Humanities: The Search for Principles and Patterns from Antiquity to the Present*, Oxford [et al.]: Oxford University Press, 2013, 279 [hereafter referred to as Bod 2013a].

130 Wilhelm Scherer, "Kleinere Schriften von Karl Lachmann," in: *Kleine Schriften zur altdeutschen Philologie von Wilhelm Scherer*, ed. by Karl Burdach, Berlin: Weidmannsche Buchhandlung, 1893, 92–99, here 92f. [originally published in *Preußische Jahrbücher* 38 (1876), 597–604], original: "Lachmann ist im Jahre 1851 gestorben, aber er lebt auf die wunderbarste Weise unter uns fort. Er wird geliebt und gehaßt wie ein Gegenwärtiger und Wirkender. [...] Wie kommt es, daß man einem ausgezeichneten Gelehrten nicht die wohlverdiente Grabesruhe gönnt? [...] Der Hauptgrund liegt jedenfalls in Lachmanns eigener Persönlichkeit. Er imponirt [sic!] durchaus. [...] Jedes Wort, das aus seiner Feder kommt, macht den Eindruck des Echten, des mühsam Erworbenen und aus einer starken Überzeugung Geflossenen."

> vidual if he does not meet it. To work towards betterment, to develop or reshape Lachmann's method theoretically, to finally fill the white sheet that logic and epistemology have left unattended for us, that would be the finest and worthiest way of celebrating Lachmann's memory.[131]

It would seem that in the years since then, this conciliatory stance did not quell a more inflammatory rhetoric seeping into the discourse about and around Lachmann's methodology and influence; but it should also be noted that a strong tradition of neo-Lachmannianism developed in Italy which did indeed reshape Lachmann's method in the spirit that Scherer proposed.[132]

As for Lachmann's detractors, Jacob Grimm's criticism has been mentioned already, although he cannot be seen as a predecessor to later critics because the quality of criticism was different. It was not until the *New Philology* movement in the late 1980s and early 1990s that Lachmann and his method – or the ideologically petrified variation thereof – met with veritable resistance.[133]

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131 Scherer 1893, 99, original: "Sollte es nicht auch zu der Berufsmoral des Gelehrten gehören, daß er über die Berechtigung der Methoden theoretisch im Klaren sei, mit denen er zu arbeiten versucht? Die Forderung wird innerhalb der Geisteswissenschaften so selten erhoben, daß es dem Einzelnen kaum zum Vorwurfe gereichen kann, wenn er ihr nicht genügt. Hierin auf Besserung hinzuwirken, Lachmanns Methode theoretisch auszubilden oder umzubilden, das weiße Blatt endlich zu füllen, welches die Logik und Wissenschaftslehre für uns offen hält, das wäre die schönste und würdigste Art, Lachmanns Gedächtnis zu feiern."

132 This can be attributed to Giorgio Pasquali who further developed Lachmann's methodology under the influence of Joseph Bédier; see Giorgio Pasquali, *Storia della tradizione e critica del testo*, Firenze: Le Monnier, 1934. This publication was also a reaction to and expansion on Maas 1927, cf. Paolo Trovato, *Everything You Always Wanted to Know about Lachmann's Method*, Padova: libreriauniversitaria.it, 2014, 71. See also, Paolo Trovato, "What if Bédier was Mistaken? Reflections of an Unrepetant Neo-Lachmannian," in: *Digital Philology: New Thoughts on Old Questions*, ed. by Adele Cipolla, Padova: libreriauniversitaria.it, 2018, 161–180, and Marina Buzzoni and Eugenio Burgio, "The Italian 'Third Way' of Editing between Globalization and Localization," in: *Internationalität und Interdisziplinarität der Editionswissenschaft* (editio / Beihefte; vol. 38), ed. by Michael Stolz and Yen-Chun Chen, Berlin / Boston: De Gruyter, 2014, 179–188, online: <https://doi.org/10.1515/9783110367317.179>.

133 In the case of the *Altgermanistik* (studies of German medieval philology), Karl Stackmann summarized the points of contention well, cf. Karl Stackmann, "Neue Philologie?" in: *Modernes Mittelalter: Neue Bilder einer populären Epoche*, ed. by Joachim

An increasing number of philologists took offence at Lachmann's tendency to treat the textual transmission from different eras and centuries the same, no matter the historical background and reality, always supposing authorial intent and aiming at establishing that 'one true version'. What might be applicable to early modern works – with its promotion of the single author and even the sole *genius* of artistic creation[134] – does not necessarily lend itself as a concept on which to project medieval intellectual activity. Bernard Cerquiglini defined the stance of the *New Philology* movement best when he famously stated: "L'auteur n'est pas une idee médiéval."[135]

Heinzle, Frankfurt am Main [et al.]: Insel-Verlag, 1999, 398–427. See also Thomas Bein, "Die mediävistische Edition und ihre Methoden," in: *Text und Edition: Positionen und Perspektiven*, ed. by Rüdiger Nutt-Kofoth, Berlin: Erich Schmidt, 2000, 81–98 (see esp. 89–92 for his discussion of the *New Philology* movement). For further insight into the tense discourse that dominated the early 1990s, see William Doremus Paden (Ed.), *The Future of the Middle Ages: Medieval Literature in the 1990s*, Gainesville: University Press of Florida, 1994.

134 See Larry Shiner, *The Invention of Art: A Cultural History*, Chicago: University of Chicago Press, 2001, 111–115. Herder, Goethe, and the *Sturm und Drang* spearheaded the popularization of the artistic genius but Kant's definition in his *Kritik der Urteilskraft* (1790), chapter 56, § 46 "Schöne Kunst ist Kunst des Genies" (as well as the following paragraphs), was influential as well, cf. Keren Gorodeisky, '19th Century Romantic Aesthetics,' in: *The Stanford Encyclopedia of Philosophy* (Fall 2016 edition), ed. by Edward N. Zalta, online: <https://plato.stanford.edu/archives/fall2016/entries/aesthetics-19th-romantic/>. In terms of notions of intellectual property, it might be interesting that he speaks of the genius as the "dem eigentümlichen einem Menschen bei der Geburt mitgegebenen, schützenden und leitenden Geist" (*eigentümlich* meaning individual and unique but also being related to *Eigentum* which means property and ownership). For further reading, see Paul W. Bruno, *Kant's Concept of Genius: Its Origin and Function in the Third Critique*, London [et al.]: Continuum, 2011. The concept of intellectual ownership and property precedes Kant and it might be said that the general notion was 'in the air' in the 18th century. In a German context, one of the first legal scholars who wrote about the topic was Nicolaus Hieronymus Gundling, who published a monograph about it in 1726, cf. Nicolaus Hieronymus Gundling, *Rechtliches und Vernunfft-mässiges Bedencken eines Icti, der unpartheyisch ist, von dem schändlichen Nachdruck andern gehöriger Bücher*, [sine loco], 1726. (Icti is short for "Iurisconsulti".) He explicitly speaks of "Eigenthum" in terms of authors' rights twice, see ibid., 5 and 25. For more information on Gundling and his role in the legal history of the concept, see Heiner Lück, "Nicolaus Hieronymus Gundling und sein ‚Rechtliches Und Vernunfft-mässiges Bedencken … von dem Schändlichen Nachdruck andern gehöriger Bücher'," in: *Grundlagen und Grundfragen des Geistigen Eigentums*, ed. by Louis Pahlow and Jens Eisfeld, Tübingen: Mohr Siebeck, 2008, 9–34.

135 Bernard Cerquiglini, *Éloge de la variante: Histoire critique de la philology*, Paris: Ed. du Seuil, 1989, 25.

However, in his desire to radically challenge the established paradigm, he overstated the 'death of the author' – the medieval author, as it were.[136] Instead of intertextuality, he emphasized variation in transmission as the constitutive characteristic, but he was misguided in stating that there was no concept of authorship at all when he instead could have said that there was a *different* concept of authorship. That there *was* a concept of authorship is indisputable. Why else would there have been depictions of authors?[137] Why else would there have been attributions to authors by name or misattributions by the same token?[138] Misattributions that were supposed to invoke *authority*. Can there be a concept of authority without a concept of authorship? It hardly seems possible. For there

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136 I am, of course, referring to Roland Barthes' famous essay that was published much earlier than Cerquiglini's work but undoubtedly shaped the discourse in which Cerquiglini was later still embedded, even if Cerquiglini's argument was of a different nature. See Roland Barthes, "The Death of the Author," in: *Aspen* 5+6 (1967), online: <https://www.ubu.com/aspen/aspen5and6/threeEssays.html#barthes> (accessed 12 January 2023). For further 'postmodern' discussion of the term, see Michel Foucault, "What Is An Author?" in: *Aesthetics, Method, and Epistemology* (Essential Works of Foucault; vol. 2), ed. by James D. Faubion, transl. by Robert Hurley [et al.], New York: The New Press, 1998, 205–222 [originally lecture given in 1969]. It was not until the end of the 1990s that the "return of the author" could be announced (at least in a German context) and even then, it was a contentious issue, cf. Fotis Jannidis (Ed.), *Rückkehr des Autors: Zur Erneuerung eines umstrittenen Begriffs* (Studien und Texte zur Sozialgeschichte der Literatur; vol. 71), Tübingen: Niemeyer, 1999.

137 See Horst Wenzel, "Autorenbilder: Zur Ausdifferenzierung von Autorenfunktionen in mittelalterlichen Miniaturen," in: *Autor und Autorschaft im Mittelalter*, ed. by Elizabeth Andersen [et al.], Tübingen: Niemeyer, 1998, 1–28. See also Christel Meier, "Ecce auctor: Beiträge zur Ikonographie literarischer Urheberschaft im Mittelalter," in: *Frühmittelalterliche Studien* 34/1 (2000), 338–392, online: <https://doi.org/10.1515/9783110242324.338>; Michael Stolz, "Die Aura der Autorschaft: Dichterprofile in der Manessischen Liederhandschrift," in: *Buchkultur im Mittelalter: Schrift – Bild – Kommunikation*, ed. by Michael Stolz and Adrian Mettauer, Berlin: De Gruyter, 2005, 67–99; and Ursula Peters, *Das Ich im Bild: Die Figur des Autors in volkssprachigen Bilderhandschriften des 13. bis 16. Jahrhunderts* (Pictura et poesis; vol. 22), Köln [et al.]: Böhlau, 2008.

138 Pseudo-Aristoteles, Pseudo-Bonaventura, Pseudo-Methodius, the list could go on. The study of this phenomenon is called pseudepigraphy. For information on the various forms this took in the Middle Ages, see [MGH], *Fälschungen im Mittelalter: Internationaler Kongreß der Monumenta Germaniae Historica München, 16.-19. September 1986* (Schriften der Monumenta Germaniae Historica; vol. 33,1–5), Hannover: Hahn, 1988; see especially the volumes 1, 2, and 5.

to be *auctoritas*, there needs to be an *auctor*, or at least the vision of an *auctor*.[139]

What was, of course, very different, was the concept of intellectual property: To say that it did not exist would be false[140] but it certainly did not exist in the way it came to exist with the arrival of printing technologies and subsequently printing privileges[141] and later the modern copyright law.[142]

This means that in addition to a variance in transmission due to the manual production process, there was a variance in transmission due to conscious decisions taken by the scribes because they were at liberty to

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139 See Thomas Bein, Rüdiger Nutt-Kofoth and Bodo Plachta (Eds.), *Autor – Autorisation – Authenzität* (editio / Beihefte; vol. 21), Tübingen: Max Niemeyer, 2012.

140 I say this because it is tempting to link the concept of intellectual property to the emergence of intellectual property laws and going by that definition, there was no concept of intellectual property during the Middle Ages. However, while there was no monetized understanding of intellectual property, there is evidence that at least some authors did have a sense of intellectual ownership, only no way of enforcing it, short of putting a curse (threatening *anathema*, excommunication) on any plagiarists; on this topic see Marc Drogin, *Anathema! Medieval Scribes and the History of Book Curses*, Montclair: Allanheld & Schram, 1983. These book curses were often found in the colophon and most commonly used to fend off book thieves, but in the case of Eike of Repgow, for example, such a curse was invoked to protect against alterations of the text. The author of the *Sachsenspiegel* (c. 1220–1230) stated in the preface of the work that he was afraid that some people could add passages to the book and pervert its meaning; he also acknowledged that he would not be able to prevent that and that he would therefore cast a curse on everyone doing an injustice with the book and wishing leprosy on those who would add false content ("alle die unrechte varen, / Unde werbin an disem buche, / den bescheide ich dise vluche, / Unde die valsch hir zu triben: / die maselsucht muze in bekliben" – Eike von Repgow, *Sachsenspiegel*, ed. by Claudius von Schwerin, Stuttgart: Reclam, 1953, 16). The fact that he had written a legal text is certainly relevant for his insistence on keeping its transmission free from any unwanted and unauthorized changes.

141 For a detailed examination of how this transitional period impacted the writing and publishing process, see the example of France as discussed in Cynthia J. Brown, *Poets, Patrons, and Printers: Crisis of Authority in Late Medieval France*, Ithaca [et al.]: Cornell University Press, 1995.

142 For more general information on intellectual property rights and laws in a historical perspective, see Lyman Ray Patterson, *Copyright in Historical Perspective*, Nashville: Vanderbilt University Press, 1968; Ronan Deazley [et. al] (Eds.), *Privilege and Property: Essays on the History of Copyright*, Cambridge: Open Book Publishers, 2010; Benedict Atkinson and Brian Fitzgerald, *A Short History of Copyright: The Genie of Information*, Heidelberg [et al.]: Springer, 2014; Isabella Alexander and H. Tomás Gómez-Arostegui (Eds.), *Research Handbook on the History of Copyright Law*, Cheltenham [et al.]: Edward Elgar, 2016; Steven Wilf (Ed.), *Intellectual Property Law and History*, London / New York: Routledge, 2017.

shorten, lengthen, and amend the material they were copying; this could have been done to tailor a work – usually but not exclusively a textual work – to the specific context of use or for any other variety of reasons. As well as a variance in content, there was also a variance in graphical display and design of each witness, and this variance appears even greater to the modern spectator because we can collate witnesses of a work from across hundreds of years and long distances in geographical provenance.

Considering the particularities of each era, the development of different schools of editorial theory is not a surprise nor was it ever as undesirable as it might have seemed to the participants of such disputes. Still, the need for scholarly editing has not abated and neither has the need for further theoretical development.

One thought for consideration could be this: Once the definition of a 'work' as a piece of authored intellectual property falls away, it stands to reason that the materiality strongly tied to this definition in the form of the 'book' might lose part of its relevance as well. Does it matter whether something was written on a piece of parchment or carved into stone? In the case of textual transmission, there would seem to be a hierarchy of attention paid to codices and inscriptions, for example, with the study of codices arguably ranging higher in a medieval context. This statement is not meant to disparage the study of inscriptions – they are similarly subject to their own discipline[143] and have a long and rich tradition of scholarly editions in Germany.[144] Also, there are more nuances to the

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143 Epigraphy is a *historische Hilfswissenschaft* ('auxiliary historical science'), same as codicology. For literature, see, for example, Christer Bruun and Jonathan Edmondson (Eds.), *The Oxford Handbook of Roman Epigraphy*, Oxford [et al.]: Oxford University Press, 2015, and Johannes Renz and Wolfgang Röllig, *Handbuch der althebräischen Epigraphik* (3 vols.), Darmstadt: WBG, ²2016. See also Annamaria De Santis and Irene Rossi (Eds.), *Crossing Experiences in Digital Epigraphy: From Practice to Discipline*, Berlin / Boston: De Gruyter, 2018.

144 I mention Germany here because there is a series dedicated to inscriptions from medieval and early modern times specifically, in addition to the more common corpora of ancient Greek or Latin inscriptions. *Die Deutschen Inschriften des Mittelalters und der Frühen Neuzeit* were founded in 1934 by Friedrich Panzer, Karl Brandi, and Hans Hirsch and have worked on publishing editions of inscriptions in German-speaking territories since then, excelling 100 volumes at present; see *Die deutschen Inschriften*, ed. by the Academies of Sciences of Göttingen, Heidelberg, Mainz, München and the Austrian Academy of Sciences in Wien, Wiesbaden: Reichert, 1942–present, and, for

argument than I can fully portray here: For historical studies of the time preceding late Antiquity – before codices superseded scrolls and, more importantly for the longevity of the material, parchment superseded papyri, although we have to qualify that there are regional differences in these regards –,[145] inscriptions take on a much greater importance as conveyors of contemporary information, of course. The hierarchy of attention bestowed on historical source material is first and foremost dependent on the availability of said source material. Furthermore, it is dependent on the research question and the information that is being sought, seeing as the information found in inscriptions and codices may be very different; or, to put it another way: complementary. And lastly, to continue with that thought, the use of source material is not an either-or situation. Ideally, historians will make use of sources that are as diverse as possible, so long as they pertain to their proposed hypothesis. But – and here is where this hierarchy of attention becomes relevant for the topic at hand – the question is one of interdisciplinarity. The reason that different types of historical source material have begot different volumes of research literature is that they are not merely historical source material but of research interest in and of themselves to different disciplines. In the case of texts and scholarly editions, this research interest has been, by and large, dominated by literary studies and thus by the material deemed literary material – with the caveat that editions are still predominantly created by those with a historical interest in any of the subjects involved: philosophy, literary studies, history, musicology, et cetera. The theological interest in textual criticism with regard to biblical studies occupies its own space.[146]

I stress this seemingly mundane observation because it has consequences for the focus on scholarly editions of other materials and the

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more information, the digital version of the project, *Deutsche Inschriften Online* (DIO), <http://www.inschriften.net/> (accessed 12 January 2023); on the latter, see also Torsten Schrade, "Epigraphik im digitalen Umfeld," in: *Skriptum* 1/1 (2011), 7–11.

145 On the topic of manuscript culture and material as well as medial changes, see, to start with, Jörg Quenzer, Dmitry Bondarev and Jan-Ulrich Sobisch (Eds.), *Manuscript Cultures: Mapping the Field*, Berlin / Boston: De Gruyter, 2014.

146 See, to start with, Emanuel Tov, *Textual Developments: Collected Essays. Volume 4* (Supplements to Vetus Testamentum; vol. 181), Leiden [et al.]: Brill, 2019.

study of intersections between 'works' that are differently categorized. The most obvious consequence is the body of methodology or lack thereof. The more interesting consequence, however, is that it furthers the demise of the *Werkbegriff;* the definition of a 'work' that was classically author-oriented, then became text-oriented,[147] declined further in the later part of the 20th century, even in the scholarly editing practices of musicology,[148] but was never fully laid to rest because, as a German saying goes, the condemned live longer. Moving away from the author-oriented paradigm to a paradigm that acknowledged a more fluid kind of text – the kind of fluidity that Paul Zumthor memorably termed *mouvance*[149] – was already a step towards an increased level of uncertainty as to where to draw the boundaries. If a work is not the intellectual creation of an individual, or, which would be more to the point, if a work is not transmitted as the intellectual creation of an individual, what constitutes a work? In the case of texts, the exact same wording of something intellectually self-contained? But it cannot be the exact same wording, or at least it rarely is in the case of several surviving witnesses, because some variation was almost inevitable; such as orthographical variants, given the lack of standardized spelling, or copying mistakes, given the manual means of production, or semantic variants, intended to adjust a text for the individual *Gebrauchskontext*, the aforementioned context of use. What is the criterion, then – that which in modern German copyright law is called *Schöpfungshöhe* or *Gestaltungshöhe*, the threshold for originality?[150]

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147 See Kondrup 2013 and Gunter Martens, "Das Werk als Grenze: Ein Versuch zur terminologischen Bestimmung eines editorischen Begriffs," in: *editio* 18 (2004), 175–186, online: <https://doi.org/10.1515/9783484604636.175>.

148 Cf. Schmidt 2016, part I: "Durch die kompositorische Entwicklung im 20. Jh. dagegen ist die Idee des individuellen Kunstwerks zum Problem geworden; und man hat angesichts der Tatsache, daß zahlreiche Komponisten gänzlich andersartige und entgegengesetzte Musikkonzepte entwickelt haben, zu Recht vom Zerfall des Werkbegriffs gesprochen."

149 Cf. Paul Zumthor, *Essai de poétique médiévale*, Paris: Éditions du Seuil, 1972, esp. 65–75.

150 On the topic of which see Eva-Irina Gamm, *Die Problematik der Gestaltungshöhe im deutschen Urheberrecht: Unter besonderer Berücksichtigung europarechtlicher Vorgaben und der Überschneidung mit dem deutschen Geschmacksmuster-, Wettbewerbs-*

Philology found a way to keep editing, amidst this confusion, because more often than not, 'the proof is in the pudding', so to speak. There is some tacit knowledge involved in these questions, even if details of a decision might be debated. That the *New Philology* movement caused such unrest should give pause, however. This is all the more true for the fact that it never became fully clear why variants would be *the* constitutive factor in medieval works, seeing as many variants are actually of a variety that is not particularly noteworthy beyond linguistic or stemmatological studies and often rather serves as a reminder that something unified can emerge in essence despite its fragmented transmission.

E.
FACSIMILE REPRODUCTION

Now that we have laid out some of the basic considerations underpinning the disciplinary framework of this book by traversing a small part of this 'wide field', to speak in the manner of Fontane, it is time to return to the topic introduced at the beginning of this chapter, namely the topic of *facsimilization*. At first glance, one might be persuaded to think that this topic is actually of little relevance in the present context; facsimile *editions* have been, after all, ignored by textual scholarship for the longest time, exemplified by the attitude of Peter Robinson, noted theorist of digital scholarly editing, who states:

> Notoriously, facsimile editions in print form are of very little use to the reader, or even to scholars, whose interest (so far as it touches on the documents) is likely to be in questions of how the received text changed over time, how it was received, how it was altered, transformed, passed into different currencies.[151]

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und Kennzeichnungsrecht (Schriftenreihe des Archivs für Urheber- und Medienrecht; vol. 216), Baden-Baden: Nomos, 2004.

151 Peter Robinson, "Towards a Theory of Digital Editions," in: *Variants* 10 (2013), 105–131, here 127.

In such a view on scholarly editing, there is no place for facsimiles – at least not where the *scholarship* of scholarly editing is concerned.

If we take another look at the situation, however, we find that something surprising is happening in the world of textual criticism: Few are speaking *about* facsimiles but almost everyone is speaking *of* facsimiles; 'digital facsimiles', to be exact.[152] Mats Dahlström has described this change well:

> Until recently, facsimiles have largely played the subordinate role of illustration to the transcription text, an add-on. Usually, only a few sections in the source were photographically reproduced. Now, however, almost all digital editing involves image capture, even when the editors aim for a text transcription edition. Not only can OCR turn the images into machine-readable and codeable text, the edition can also display images in full alongside the edited transcriptions. The facsimiles are then no longer just tools for internal work, but a form of publication mode.[153]

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152 Cf. by way of example, Pierazzo 2016, *passim*; Boot 2009, 53f.; Alois Pichler and Tone Merete Bruvik, "Digital Critical Editing: Separating Encoding from Presentation," in: *Digital Critical Editions*, ed. by Daniel Apollon, Claire Bélisle and Philippe Régnier, Urbana [et al.]: University of Illinois Press, 2014, 179–202, here 195f.; Kathryn Sutherland and Elena Pierazzo, "The Author's Hand: From Page to Screen," in: *Collaborative Research in the Digital Humanities*, ed. by Willard McCarty and Marilyn Deegan, London / New York: Routledge, 2012, 191–212, here 203; or, with regard to the text-image-editor by *TextGrid*, Yahya Ahmed Ali Al-Hajj and Marc Wilhelm Küster, "The Text-Image-Link-Editor: A Tool for Linking Facsimiles and Transcriptions, and Image Annotations," in: *Literary and Linguistic Computing* 28/2 (2013), 190–198, online: <https://doi.org/10.1093/llc/fqs067>. See also the section on "Facsimiles and Document-Centric Editing" by Elena Pierazzo in *Creating a Digital Scholarly Edition with the Text Encoding Initiative*, ed. by Marjorie Burghardt, 2017, online: <https://www.digitalmanuscripts.eu/digital-editing-of-medieval-texts-a-textbook/> (accessed 12 January 2023). In the literature about digital scholarly editing, aside from Dahlström 2019, Patrick Sahle counts among the few who have actively discussed the phenomenon of facsimiles in editing, tracing the debate of their advantages and disadvantages in the textual scholarship of the past, cf. Sahle 2013a, 220–224. If we go further back in time – with regard to digital scholarly editing, not scholarly editing in general –, we can also find articles such as Kevin Kiernan, "Digital Facsimiles in Editing: Some Guidelines for Editors of Image-based Electronic Editions," in: *Electronic Textual Editing*, ed. by John Unsworth, Lou Burnard, and Katherine O'Brien O'Keeffe, New York: Modern Language Association, 2006, 262–268, online: <https://ebeowulf.uky.edu/kiernan/MLA-TEI/> (accessed 12 January 2023).

153 Dahlström 2019, 203.

With regard to the previous sections of this chapter, we might speak of a *great convergence* here. Scholarly editing practices, traditionally rooted in the transcription, i.e. the notational reproduction, of texts, are converging with practices of digitizing the very source materials that scholarly editors would have sought to reproduce otherwise; digitizing, in this case, usually meaning imaging and little besides, since the point of view is still document-centric and text-focused. As Dahlström points out, editors are interested in a "reliable representation of these sources"[154] and digital facsimiles "offer an enhancement of that purpose."[155] He furthermore maps a few areas of inquiry that should find more discussion in the future.[156] Perhaps they can be condensed into the obviously highly pertinent question as to what criteria a digital 'facsimile' must satisfy to count as a facsimile – that is to say, to be similar to the original in some ways for some purposes and most importantly similar *enough* – rather than a mere 'image' of varying identification potential. If we were to formulate a minimum requirement, then we could be so bold as to say that a facsimile should be identifiable as a reproduction of the 'original' that maintains or reflects and, in any case, does not actively distort the core (visual) qualities of said 'original'. That would still be a fairly loose definition.

In contrast, a facsimile edition in the printed world is understood to be a three-dimensional reproduction of a manuscript that mirrors not only the appearance of the manuscript but its dimensions, colours, tactile feeling, and materiality, all in very specific ways that may account for the pricing policy of such reproductions. However, few involved in these processes of reproduction have ever sat down and committed these ideas pertaining to the requirements for facsimile editions to paper,[157] or

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154 Ibid., 197.

155 Dahlström 2019, 197.

156 One point that he touches on, for example, is the *manipulation* of digital 'facsimiles', raising the issue of authenticity; cf. ibid., 199: "I mentioned that digital facsimiles are regularly edited and manipulated. For instance, colour is adjusted, images which have been warped or distorted in the capture phase are adjusted, and the background is often manipulated digitally in the post-processing phase."

157 Giovanni Scorcioni, the founder of Facsimile Finder, is an exception to this and has discussed the process of producing a facsimile in Giovanni Scorcioni, "Distortion in Textual Object Facsimile Production: A Liability or an Asset?" in: *Textual Distortion*,

at least not to paper that would have found widespread circulation in academic literature concerned with scholarly editing.[158] Neither has a comprehensive history of the practices and techniques of facsimilization been written.[159] Case studies exist that investigate the publication and reproduction history of individual manuscripts or works, such as from Madeline H. Caviness and Hiram Kümper,[160] and Andrea Worm has examined facsimilization practices in early modern history[161] but little

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ed. by Elaine Treharne and Greg Walker, Suffolk: Boydell & Brewer, 2017, 117–129, online: <https://doi.org/10.1017/9781787441538.009>. Interestingly, apparently unaware of the naming conventions in the digital humanities, he writes: "Indeed, the expression 'digital facsimile' has not been used, because using the word 'facsimile' for digital images would itself be a distortion of the truth. The word 'facsimile', from Latin, means 'made similar'. Consistency with the etymology of the word prevents digital images from being considered facsimiles. Since a facsimile is something that is as close as possible to the object it represents in all its aspects, the idea of a 'digital facsimile' would defy such definition." (Ibid., 128.)

158 For the discussion of facsimile editions in 'traditional' scholarly editing discourses, insofar as such discussions exist, see Hans Zeller, "Die Faksimile-Ausgabe als Grundlagenedition für Philologie und Textgenetik: Ein Vorschlag," in: *Textgenetische Edition* (editio / Beihefte; vol. 10), ed. by Hans Zeller and Gunter Martens, Tübingen: Niemeyer, 1998, 80–100, here esp. 89–91, online: <https://doi.org/10.1515/9783110939996-005>.

159 One of the most pertinent articles remains Thomas Hilka, "Zur Terminologie und Geschichte der Faksimilierung," in: *Bibliothek: Forschung und Praxis* 9/3 (1985), 290–299, online: <https://doi.org/10.1515/bfup.1985.9.3.290>, in particular with regard to a broad survey of changing technologies of facsimilization; in ibid., 291, fn. 5, he lists further literature, some of which, like a thesis about facsimile print in the 19th century, never saw the light of day (i.e. was never made available to the public). The contributions by Manfred Kramer should also be noted here, especially Manfred Kramer, "Das Faksimile: Versuch zur Deutung eines Phänomens der modernen Buchproduktion," in: *Librarium: Zeitschrift der Schweizerischen Bibliophilen-Gesellschaft* 23/2 (1980), 82–95, issue online: <http://doi.org/10.5169/seals-388342>, and Manfred Kramer, "Ein Faksimile ist keine Handschrift: Zur Schwierigkeit des Vergleichs von Wiedergabe und Original," in: *Librarium: Zeitschrift der Schweizerischen Bibliophilen-Gesellschaft* 29/3 (1986), 203–207, issue online: <https://doi.org/10.5169/seals-388467>. See also Weitenkampf 1943. With regard to the facsimilization of historical maps, see Cornelis Koeman, "An Increase in Facsimile Reprints," in: *Imago Mundi* 18 (1964), 87–88. It stands to reason that further relevant writings exist in other languages, older literature, and literature not as easily researched.

160 See Madeline H. Caviness and Hiram Kümper, "An Early Eighteenth-Century Attempt to Publish a Facsimile of Two Sachsenspiegel Manuscripts," in: *Manuscripts Changing Hands*, ed. by Corine Schleif and Volker Schier, Wiesbaden: Harrassowitz, 2016, 283–351.

161 See Andrea Worm, "Mittelalterliche Buchmalerei im Spiegel neuzeitlicher Publikationen," in: *Visualisierung und Imagination: Materielle Relikte des Mittelalters in bildlichen Darstellungen der Neuzeit und der Moderne* (Göttinger Gespräche zur Ge-

long-form research can be found when it comes to the late 19th century and early 20th century which is when rapidly improving types of photographic facsimilization would appear to flood the book market, which we will discuss in a moment's time.[162] Dahlström tentatively dates the early use of facsimiles in scholarly editions into the 1920s, referencing a facsimile edition of the *Codex Argenteus* from 1927.[163] That edition was prepared for the 450th anniversary of the University of Uppsala.[164]

If we apply Dahlström's criterion for singling out this facsimile edition as an early use of facsimiles in scholarly editing, then we should engage with the academic conversation offered by him and move the timeline back further to strengthen his point that facsimile editions "have a long history in scholarly editions"[165] or, I would amend, in scholarly contexts, i.e. being produced with scholarly diligence or interest. It is not possible to give a full account here but some aspects shall be highlighted.

First of all, facsimilization practices existed before photographic reproduction. An argument can be made that facsimilization – as a book reproduction that is mechanized to a certain extent, producible in more than one item, and 'true to the original' insofar as it can be – originates together with printing practices in the 15th century when printers closely adhere to and copy the layout and design of handwritten manuscripts. An obvious example for this are the block-book versions of the *Biblia*

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schichtswissenschaft; vol. 25), ed. by Bernd Carqué, Daniela Mordini and Matthias Noell, Göttingen: Wallstein, 2006, 153–214.

162 At first glance, David McKitterick, *Old Books, New Technologies: The Representation, Conservation and Transformation of Books Since 1700*, Cambridge: Cambridge University Press, 2013, would appear to be a comprehensive survey, but none of the examples listed on the following pages in this chapter are to be found in it; except for a few mentions of bookseller Bernard Quaritch and photographer William Griggs. See ibid., 281 and 284, for the index listings of Griggs and Quaritch. For the examples McKitterick relates with regard to early photographic reproductions of manuscripts, see McKitterick 2013, 114–138.

163 A digital version of this facsimile can be found online, provided by the University Library of Uppsala; see *Codex argenteus Upsaliensis: Jussu Senatus Universitatis phototypice editus*, Upsaliæ: Societas Malmö ljustrycksanstalt, 1927, Sv. Biblar. Got. fol, <https://nbn-resolving.org/urn:nbn:se:alvin:portal:record-173610>.

164 Cf. the information provided by the University of Uppsala, <https://www.ub.uu.se/about-the-library/exhibitions/codex-argenteus/printed-editons/facsimile-edition/> (accessed 12 January 2023).

165 Dahlström 2019, 203.

pauperum which copy the picture cycles of the typological work alongside the text.[166] These were realized with woodcuts. Even if we do not believe them to be in the same category as modern facsimile prints, given that they obviously look different from the manuscript illustrations they are inspired by, we may take note of the fact that these block-books themselves were reproduced in facsimile print in the early 20th century, such as by Paul Heitz and Wilhelm Ludwig Schreiber in 1903.[167] (See **FIGS. 3** and **4**.)

In fact, there would seem to be countless examples of facsimile or 'facsimile-similar' reproductions before 1927 which arise from scholarly interest or are accompanied by scholarly commentary. In 1624, attempts are made to facsimilize the *Vergilius Vaticanus* (Cod. Vat. lat. 3225, Rome) with copperplate engraving.[168]

In 1697, Heinrich Günther von Thülemeyer publishes a facsimile of the *Tractatio de Bulla aurea* which adheres closely to the original in format, script, and even line breaks, with one page being a copper engraving true to the original.[169] In 1818, C. M. Engelhardt publishes his well-known hand-traced facsimile of the miniatures in the *Hortus deliciarum*,

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166 An example for this is the Xylo-5 in the Bibliothèque nationale de France, Paris, c. 1480–1485, <https://gallica.bnf.fr/ark:/12148/bpt6k850504w>.

167 Cf. Paul Heitz and Wilhelm Ludwig Schreiber (Eds.), *Biblia pauperum: Nach dem einzigen Exemplare in 50 Darstellungen (früher in Wolfenbüttel, jetzt in der Bibliothèque nationale). Mit einer Einleitung über die Entstehung und Entwicklung der Biblia pauperum unter besonderer Berücksichtigung der uns erhaltenen Handschriften von W. L. Schreiber*, Strasbourg: Heitz, 1903. This edition includes 50 plates, 29 text illustrations, and 1 *Lichtdrucktafel* ('phototype plate'), cf. the catalogue of the publisher contained in Engelbert Baumeister and Paul Heitz (Eds.), *Einblattdrucke des fünfzehnten Jahrhunderts (40): Formschnitte des fünfzehnten Jahrhunderts in den Sammlungen des Fürstlichen Hauses Oettingen-Wallerstein zu Maihingen*, Strasbourg: Heitz, 1913, l, online: <https://doi.org/10.11588/diglit.50934#0077>; cf. ibid., k–l for the very interesting list of other facsimile reproductions by the publisher, some of which were realized with *Lichtdruck*, some with *Hochätzung* ('etching in relief'), some additionally *handkoloriert* ('coloured by hand'), and so on. In that list from one publisher alone, we find over 40 facsimile prints before the year 1913, many of which already contain photographic *Lichtdruck* facsimiles.

168 Cf. Frank 1980, 84. As both Frank and Hilka note, the partial facsimilization of one page of this manuscript in the late 17th century by Jean Mabillon later aided in the textual reconstruction of lost text, cf. ibid. and Hilka 1985, 295.

169 Cf. Frank 1980, 87, and Hilka 1985, 295. For a digitization of this print, see Heinrich Günther von Thülemeyer, *Tractatio de bulla aurea, argentea, plumbea et cerea in genere, nec non in specie de aurea bulla Caroli IV. imperatoris*, Frankfurt am Main:



FIG. 3: Typological schema from the *Biblia pauperum* picture cycle, c. 1480–1485; from Xylo-5, Bibliothèque nationale de France, Paris, <https://gallica.bnf.fr/ark:/12148/bpt6k850504w/> (PD) [first schema, unpaginated].



FIG. 4: Typological schema from the *Biblia pauperum* picture cycle, c. 1480–1485; from the facsimile reprint of the xylographic BNF Paris Xylo-5 by Heitz / Schreiber 1903 [first schema, unpaginated].

which we will discuss further in **CHAPTER V**.[170] In 1873 – and this is where it gets interesting for those who are primarily interested in photographic facsimile reproduction – Anton Frind, canon in Prague, commissions the publication of a *Lichtdruck* ('collotype' or 'phototype') facsimile of Alexander Minorita's *Expositio in Apocalypsim* to celebrate the 900th anniversary of the diocese of Prague. Since phototype prints only begin to become widespread in the 1870s and 1880s, that reproduction must be one of the earliest phototypical publications of a medieval manuscript.[171] It is, at the very least, the first reproduction of this type undertaken by the court photographer of Prague, as a biographer of Anton Frind informs us in 1883.[172]

Other facsimile publications are similarly motivated by anniversaries as in Prague and later Uppsala: In 1887, the *Codex manesse* is published as a *Lichtdruck* facsimile by Franz Xaver Kraus to commemorate the 500th anniversary of the University of Heidelberg.[173] In 1889, 38 facsim-

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Bencard, 1697, held by the Staatliche Bibliothek, Regensburg, 999/2Jur.1010, <http://mdz-nbn-resolving.de/urn:nbn:de:bvb:12-bsb11057367-8>.

170 See C. M. Engelhardt (Ed.), *Herrad von Landsperg [...] und ihr Werk, Hortus deliciarum: Ein Beytrag zur Geschichte der Wissenschaften, Literatur, Kunst, Kleidung, Waffen und Sitten des Mittelalters*, Stuttgart [et al.]: Cotta, 1818, <http://catalogue.bnf.fr/ark:/12148/cb419048381>.

171 Processes of chromolithography and subsequently photolithography are in use earlier. As Hilka relates, upon the first pioneering works of photographic manuscript reproductions being performed in England by William H. Fox Talbot in the 1840s, and circulated privately in 1840, head librarian Friedrich Wilhelm Ritschi (1806–1876) from Bonn develops a systematic plan for the facsimilization of entire codices and presents it to the assembly of philologists in Gotha on 30 September 1840; cf. Hilka 1985, 298. These plans are not realized and it is only the invention of *Lichtdruck* which finally "allows for a true flood of very good facsimile editions in hitherto unknown quality" (Hilka 1985, 299, original: "Die Erfindung des Lichtdrucks hat eine wahre Flut von sehr guten Faksimileausgaben in bis dahin nicht gekannter Qualität ermöglicht.").

172 Cf. [s.n.], *Der Episcopat der Gegenwart in Lebensbildern dargestellt: Dr. Anton Ludwig Frind, Bischof von Leitmeritz († 28. Oktober 1881)*, Würzburg / Wien: Leo Wörl, 1883, 14: "Aus dem gleichen Anlasse unterzog er sich der Aufgabe, einen aus dem 13. Jahrhundert stammenden illustrirten [sic!] Kommentar über die Apokalypse, dessen Manuskript in der Kapitelbibliothek sich vorfindet, auf Kosten des Kapitels in Phototypie herauszugeben: ‚Scriptum super Apocalypsim cum imaginibus'. Es war dies das erste Beispiel einer Vervielfältigung auf phototypischem Wege, welche vom Prager Hofphotographen H. Eckert durchgeführt wurde."

173 See Franz Xaver Kraus (Ed.), *Die Miniaturen der Manesse'schen Liederhandschrift. Im Auftrag des Großherzoglich Badischen Ministeriums der Justiz, des Kultus und Unterrichts nach dem Original der Pariser Nationalbibliothek in unveränderlichem*

ile plates of the *Ada-Evangeliar* are published by Karl Menzel et al.[174] Karl Lamprecht, who is among the editors, relates in some detail how the plates were made: the Ada manuscript photographed in the *Reichsdruckerei* Berlin in 1886; the cover photographed by the court photographer Anselm Schmitz in Cologne; photographs of manuscripts in Vienna, Aachen, Bamberg, Paris, Abbeville, London, Epernay, and Kremsmünster made by the companies *Angerer und Goeschl*, *Hammers*, *B. Hauf*, *Sauvanaud*, *Praetorius*, *Paulus,* and *Merfeder;* phototype printing done by the *Reichsdruckerei* in Berlin; chromolithographic plates by the lithographic institute of Wilhelm Greve in Berlin.[175] I only recount this here to illustrate that no expenses or labour seem to have been spared and that there was furthermore expertise in how to produce these photographic facsimiles in a scholarly context, or at least a willingness to undertake the effort to prepare such publications. One could, of course, speculate whether such projects might have been influenced by socio-political undercurrents of the time, by a rediscovery of cultural heritage and the promotion thereof. We find a similar enthusiasm to photographically facsimilize everything from medieval manuscripts to textiles from India when we look at English photographer William Griggs and his collaborations with bookseller and antiquarian Bernard Quaritch who even produces a facsimile collection of book bindings in 1889 (see **FIG. 5**).[176]

Lichtdruck herausgegeben, Strasbourg: Trübner, 1887. For a digitized version of this facsimile of Cod. Pal. germ. 848, see <https://doi.org/10.11588/diglit.3821>.

174 See Karl Menzel [et al.] (Eds.), *Die Trierer Ada-Handschrift. Mit achtunddreissig Tafeln*, Leipzig: Alphons Dürr, 1889. For a digitized version of this facsimile of Hs 22 from the city library of Trier, see <https://archive.org/details/dietriereradahan00menz>.

175 Cf. the note by Karl Lamprecht ahead of the plates section, ibid., 123.

176 See Bernard Quaritch (Ed.), *A Collection of Facsimiles from Examples of Historic or Artistic Book-Binding, Illustrating the History of Binding as a Branch of the Decorative Arts*, London: Quaritch, 1889, online: <https://archive.org/details/collectionoffacs01quar/>. See also Bernard Quaritch (Ed.), *Examples of the Art of Book-Illumination During the Middle Ages. Reproduced in Facsimile*, London: Quaritch, 1889, online: <https://archive.org/details/examplesofartofb00quar/>, and Bernard Quaritch, *Palæography: Notes Upon the History of Writing and the Medieval Art of Illumination. Extended from a Lecture, delivered at a Conversazione of the Sette of Odd Volumes, at the Galleries of the Royal Institute of Painters in Water Colours, 12th December, 1893*, London: Quaritch [privately printed], 1894, online: <https://archive.org/details/palographynote00quarrich/>, which also contains photographic facsimiles by Williams Griggs – as with the other cited facsimile prints by Quaritch, all in colour. William Griggs



FIG. 5: Example of a facsimile of book binding; from Bernard Quaritch (Ed.), *A Collection of Facsimiles from Examples of Historic or Artistic Book-Binding, Illustrating the History of Binding as a Branch of the Decorative Arts*, London: Quaritch, 1889, plate 100, online: <https://archive.org/details/collectionoffacs01quar/>.

From the 1890s onwards, photographic facsimile prints exponentially increase in volume to the point where it makes no sense to even begin to list them all here.

What is important and what this should show is that as soon as a new technology is available, scholars, publishers, antiquarians, and others use it to *reproduce* and *present* medieval manuscripts and similar holdings of archives and libraries to the public. What is also salient, although by no means conclusive, given this brief survey, is that many of the manuscripts that were thus reproduced seem to have been *illuminated* manuscripts; indeed, often only the miniatures and pictures seem to have been reproduced, with the textual component of the work, or in this context rather *object,* receding behind the images.

Scholarly editions for text, facsimile editions for pictures? That would be too simple. But the question leads us back to where we started since it reminds us that the pictorial parts of works have not found much consideration in the edition of such works at all, should they have been text-image works where the textual parts were deemed worthy of a scholarly edition. Neither have they found consideration in the emerging discourse about digital facsimiles. In order to understand some of the fundamental conditions of *reproducibility* that we will have to consider as it relates to visual materials, we should turn to another example: the Alsatian workshop of Diebold Lauber.

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was, among other reproductions, also responsible for a photo-lithographical facsimile of Shakespeare's *Hamlet* in 1880 (as well as a number of other works by Shakespeare), see William Griggs (Ed.), *Shakspere's Hamlet: The Second Quarto, 1603. A Facsimile in Photo-Lithography by William Griggs, for 13 Years Photo-Lithographer to the India Office; with Forewords by Frederick J. Furnivall, M. A., Founder and Director of the New Shakspere Society, etc.*, London: William Griggs, 1880. As for the mentioned photo-lithographic 'facsimilization' of Indian textiles, see [s.n.], *Illustrations of the Textile Manufacturers of India*, London: Science and Art Department of the Committee of Council on Education, South Kensington Museum, 1881, online: <https://archive.org/details/CAI1057660001Images/>. William Griggs invented a process of photo-lithograpy and was associated with the India Office for many years. On his person and more information on the reproductions he produced as far back as the 1860s, see Frank Herbert Brown, 'Griggs, William,' in: *Dictionary of National Biography* (1912 supplement), ed. by Sidney Lee, London: Smith, Elder & Co., 1912, 171f.

F.
SCHOLARLY EDITIONS BEYOND TEXT

We do not need to discuss Diebold Lauber's workshop in great detail. Its mere existence refutes Goodman's reproducibility theory insofar as it relates to his work definition. But to elaborate: In the 15th century, Diebold Lauber ran a workshop in Hagenau in Alsace where he and his employees – writers and illustrators – mass-produced affordable illustrated manuscripts for several decades; a commercial manufacture that had its own product range, meaning that it produced several manuscripts of the same work, such as the four manuscripts of the German *Elsässische Legenda aurea* translation which have survived from this particular line of production.[177] (See **FIGS. 6** and **7**.)

Since the manuscripts were manually produced, and since different writers and illustrators worked in the production of the manuscripts over the years, no item sold by Diebold Lauber was, of course, identical to another. There is both pictorial as well as textual transmission variance.[178] If we were to create a traditional edition of the *Elsässische Legenda aurea*, i.e. if we were to create an edition of the *text* of the *Elsässische Legenda aurea*, we would regard these different manuscripts not

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177 For general information on Diebold Lauber and the illustrated manuscripts that were produced in his workshop, see Lieselotte E. Saurma, *Spätformen mittelalterlicher Buchherstellung: Bilderhandschriften aus der Werkstatt Diebold Laubers in Hagenau* (2 vols.), Wiesbaden: Reichert, 2001, and Christoph Fasbender (Ed.), *Aus der Werkstatt Diebold Laubers* (Kulturtopographie des alemannischen Raums; vol. 3), Berlin / Boston: De Gruyter, 2012. See furthermore the information provided by the *Biblioteca Palatina digital* at the University of Heidelberg, <http://digi.ub.uni-heidelberg.de/de/bpd/glanzlichter/oberdeutsche/lauber.html> (accessed 12 January 2023), and the project *Diebold Lauber digital* by the University of Leipzig which is a portal detailing what is known about the writers, illustrators, produced manuscripts, watermarks, as well as the known literature about this topic, cf. <http://wirote.informatik.uni-leipzig.de/mediavistik/> (accessed 12 January 2023).

178 For a comparison of two manuscripts of the *Elsässische Legenda aurea*, see Stephanie Hallinger, *Text und Bild in der elsässischen Legenda aurea: Der Cgm 6 (Bayerische Staatsbibliothek München) und der Cpg 144 (Universitätsbibliothek Heidelberg)* (Schriftenreihe Schriften zur Mediävistik; vol. 22), Hamburg: Kovač, 2015. See also Konrad Kunze, "Überlieferung und Bestand der elsässischen Legenda Aurea: Ein Beitrag zur deutschsprachigen Hagiographie des 14. und 15. Jahrhunderts," in: *Zeitschrift für deutsches Altertum und deutsche Literatur* 99/4 (1970), 265–309.

as we would regard different printed copies of the same book; we would regard them as diverging work witnesses. And thus we would collate them. But what about the illustrations? Are they not all work witnesses of the picture programme of the *Elsässische Legenda aurea*? Are we to regard them as forgeries or imitations? Imitations of what? The first illustration? There is no 'original'. There are only 'copies'. Even if the illustrators at the workshop used a template, that hardly seems as if it would qualify for Goodman's theory – then, the template would have to be the artistic original that could not be reproduced without losing something of the work 'aura' or 'essence' which, as much as Goodman projects a sober language, is what his semiotic way of delimiting a 'work' still parallels. Such a notion is, in the given context, patently absurd. Note that this is not an argument to say that Goodman's theory of reproducibility and the way it ties into his allographic-autographic differentiation is *wrong;* its popularity might be explained by a certain self-evident quality, the same quality that saw Panofsky make the remarks cited near the beginning of this chapter. However, its applicability in some circumstances, especially in those that most are familiar with, from present or otherwise historically recent times, does not automatically justify claims of a universality of such a theory. Moreover, the issue does not lie with Goodman's semiotic theory as to what signs are copyable or not, or at least it does not primarily lie there, but with the way it separates picture *works* from text *works* on a basis of *notational integrity* that is deeply flawed.[179]

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179 In the 1970s, Ralls already pointed out many issues with Goodman's theory that we cannot address in more depth here, such as: "[C]opies of the same poem, novel, or play can vary enormously, while still being of the very same work. Work-identity survives through printer's error [...], orthographical vagaries [...], textual uncertainty whether minor [...] or major [...], and even radical textual reconstruction (Lachmann's *Lucretius*). Identification itself calls for the exercise of critical judgment: It is highly questionable whether there are *any* determinate textual criteria of the identity of a literary work." (Ralls 1972, 10.) The fact that Ralls' criticism is rooted in an awareness of editorial issues indicates that Goodman's theory and editorial theory might actually be at cross purposes, and Dahlström hints at something similar when he states: "What is left out of this equation is obviously the problem of variants and versions. Goodman only talks about exact notations and correct instances, but we all know that there can be minor or major textual differences between two texts which do not in any way prevent us from identifying them as instances of the same work of art. The whole discipline of textual



FIG. 6: Saint Erhard in a manuscript of the *Elsässische Legenda aurea* from Lauber's workshop, c. 1435–1444; from 2° Cod 158, Staats- und Stadtbibliothek, Augsburg, f. 89r, <https://nbn-resolving.org/urn:nbn:de:bvb:37-dtl-0000000249> (CC BY-NC-SA 4.0).



FIG. 7: Saint Erhard in a manuscript of the *Elsässische Legenda aurea* from Lauber's workshop, c. 1434–1440; from Ms. germ. fol. 495, Staatsbibliothek zu Berlin – Preußischer Kulturbesitz, Berlin, f. 59r, <http://resolver.staatsbibliothek-berlin.de/SBB000059A700000000> (PD).

Even this would, perhaps, not constitute a significant issue if textual scholars were not wont to evoke Goodman in discussions involving artwork, such as Hans Walter Gabler in his review of Paul Eggert's *Securing the Past* (2009):

> The work of the sculptor or painter, and beyond (say) of the architect, is expressed by way of, and thereby always inseparably tied to, its material manifestation in the one unique original that is its outcome. In terms of its crafting by the hand of its originator, it is an autograph. The work of art in language, or indeed any meaningful language collocation, by contrast, does not in essence so exist. It is allographic.[180]

This view is common and it might seem applicable to, say, Picasso, but where does that leave the illustrators of Diebold Lauber's workshop? One supposes they were not 'artists'? That the illustrations in the manuscripts are not 'art' even though they are pictorial and unique (at the very least in terms of their execution, even if not their conception)?

What Gabler is interested in in that particular article is the definition of 'author' and 'authorship' – and since Eggert, in the book under review, proposes 'subtilising authorship' in a postmodern vein, using Rembrandt's œuvre as an example whereby the term 'Rembrandt' as applied to a painting encompasses a collective ideational history and sphere around a material body of work rather than merely the man who painted the painting,[181] Gabler's response is an understandable reminder of a fundamental nature of and difference between the origination and reproducibility of visual and textual works. Even if the word 'Rembrandt'

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criticism and scholarly editing, of course, is largely devoted to this problem and operates at a higher level of complexity than this." (Dahlström 2019, 205.)

180 Hans Walter Gabler, "Thoughts on Scholarly Editing: A Review Article occasioned by Paul Eggert, Securing the Past. Conservation in Art, Architecture and Literature," in: *Journal of Literary Theory* (2011), [1–16], here 4, online: <http://www.jltonline.de/index.php/reviews/article/view/307/893> (accessed 26 February 2023), PDF: <http://www.jltonline.de/index.php/reviews/article/view/307/891> (accessed 25 August 2023).

181 Cf. Paul Eggert, *Securing the Past: Conservation in Art, Architecture and Literature*, Cambridge: Cambridge University Press, 2009, esp. 109–130.

exceeds the attribution of authorship normally meant by authorship – and there is no reason to doubt that it, indeed, does –, that would not necessarily indicate that authorship needs to be redefined; rather, perhaps, that that which Eggert describes needs another term of its own.

But there is a fault here that both Gabler and Eggert seem to sense in their attempts to rectify it: That fault lies in the focus on 'author' and 'authorship' as the parameters with which to determine the scope and identity of an intellectual work and if there is a merit to the *New Philology* movement, putting this tether to the torch has to count among its greatest. Authorship can be a useful parameter under certain conditions; it can be redefined under certain conditions; and it is, in itself, of utmost importance; but it is not the sole hinge between the nebulous world of ideas and their concrete manifestation in the form of a 'work'.

Paul Zumthor, as is well-known, defined a work in the medieval context not as the archetype in a chronological stemma but as the sum of all surviving witnesses: "la collectivité des versions en manifestant la matérialité."[182] If we were to apply this understanding to visual works, *work* variations would appear, such as in the variant illustrated manuscripts from Diebold Lauber's workshop, regardless of the issue of notational reproducibility and individual authorship or rather creatorship.

Having arrived at this conclusion does not free us from considering the specifics of pictorial transmission variance and how we might grasp its cohesion or lack thereof (and how we might delineate between different works when notation falls away entirely as a characteristic). It also does not free us from considering visual works from other times and of a different medial manifestation, since this very brief look at a different type of picture work than the one imagined by Gabler and Eggert in their discussion throws the contingency of such questions into sharp relief. Neither should we fall into the trap of assuming universal truths about 'the nature' of 'the' artwork, already warned against by Panofsky and referenced earlier in this chapter, nor should we begin a conceptual modelling process based on one example. The preliminary conclusion that we have arrived at now is an important first step because

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182 Zumthor 1972, 73.

it changes the conversation; I dare say that we might discard Goodman's influence on this point. But there is still much to develop in response to the gap that the rejection of a semiotic work definition leaves us with, in this particular circumstance of scholarly editing concerns. One might be tempted to take the position that this question matters little from a pragmatic point of view: Editors will know what they want to edit, regardless of arbitrary work definitions. Editions do not have to be editions of works and works can encompass anything an editor might view as within their purview. This position forgets, however, that the issue of the work definition has consequences beyond the scope and subject of an edition. It necessarily impacts the components of an edition and how they relate to each other. What we might regard as a witness, what a witness might contain. That is why we have to pursue this line of thought if we are at all interested in the consideration of principles.

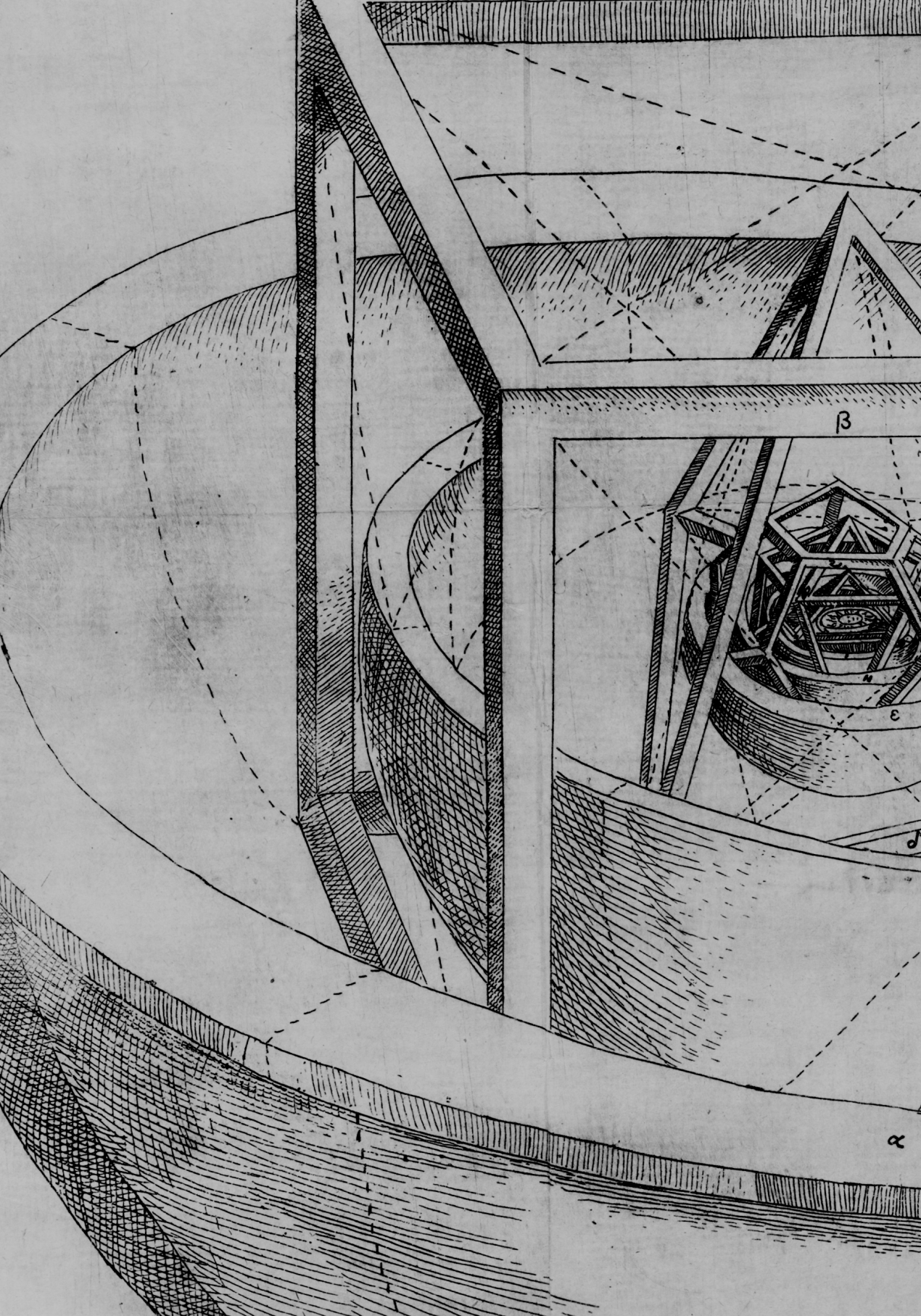
This chapter about (inter-)disciplinary starting points may have, at times, seemed to follow the motion of a pendulum, swinging back and forth, from the history of the humanities to the theory of the digital humanities. To a certain degree, this unmoored drifting, while not aimless, will follow us throughout the book. I would prefer it to be different but there is only so much that I am capable of tightening without losing the process that led me to my arguments – in that sense, the structure of this chapter is a direct expression of the search that humanists in the digital humanities might undergo when looking for the academic tradition that precedes their own reasoning and has to be built upon. Before we can continue with our investigation of variant visual works and how they may be folded into scholarly editing discourses – which is, after all, a matter of modelling –, we will have to deepen the conversation about modelling as a method first, which is a matter so fundamental that it requires a chapter of its own, having now mapped some of the foundational questions in our inquiry.

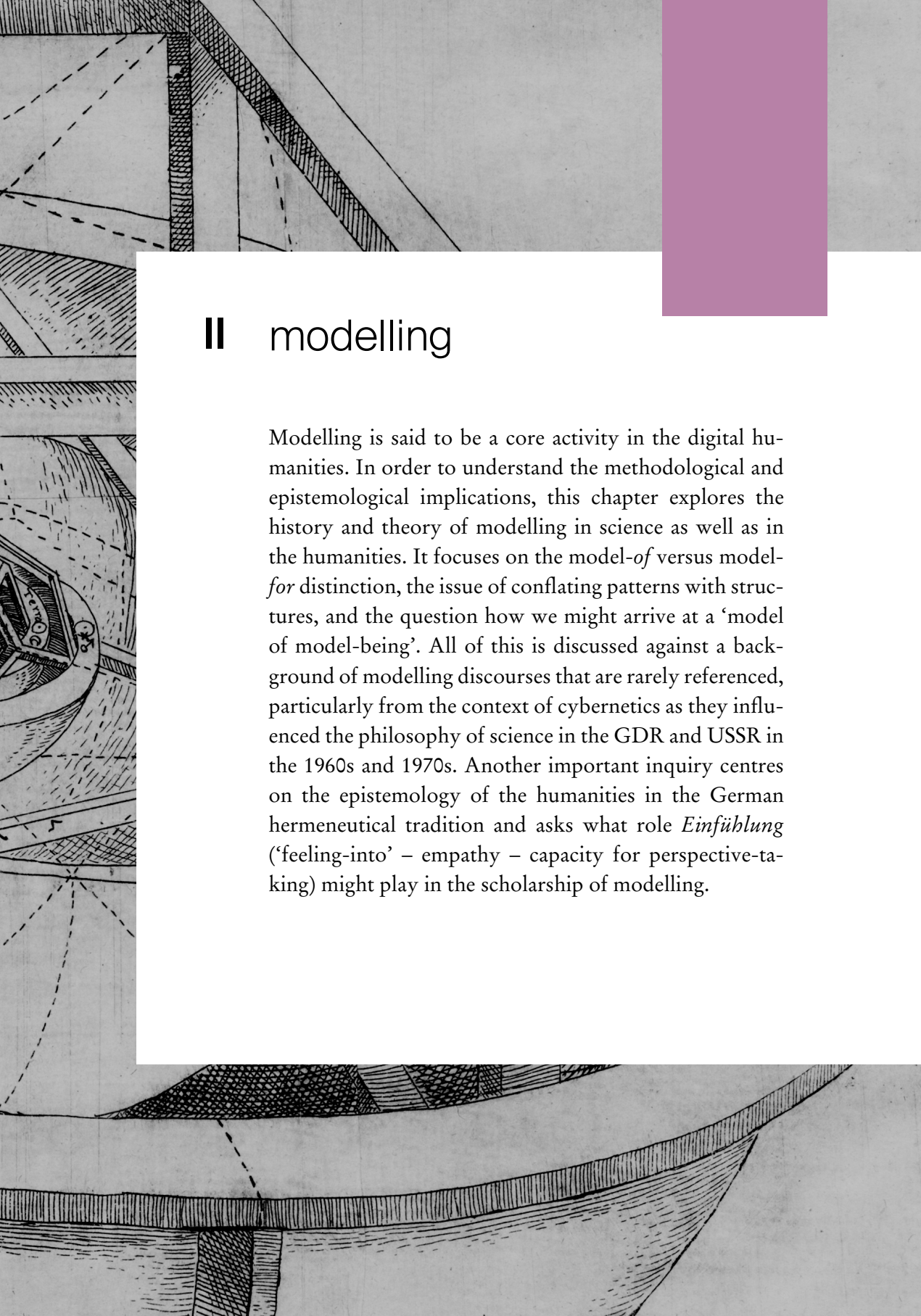
To end with, I want to quote Panofsky once more; primarily because his words strike me as topical but also because they speak to a future of our own making:

> I wish and hope that we will learn to produce, and actually produce, 'better' facsimile reproductions as time goes on, and that we will – not in spite of but

> because of this – increasingly develop the skill needed to both distinguish them from the originals and to view them – again, not in spite of but because of this – with a sense of benefit and as the case may be even with joy. Should it ever come to pass that no one should be capable of that distinction anymore, that the work of man and the work of machine should indeed have become identical – then it would not be so much the art understanding that would be dead but the art itself; and it would not have died from its reproduction.[183]

183 Panofsky 1930/1998, 1088f., original: "Ich wünsche und hoffe, daß man immer ‚bessere' Faksimilereproduktionen herzustellen lerne und herstelle, und daß – nicht trotzdem, sondern gerade deswegen – in immer zunehmendem Maße die Fähigkeit sich ausbilde, sie von den Originalen zu unterscheiden und sie – abermals nicht trotzdem, sondern deswegen – mit Nutzen und gegebenenfalls mit Genuß zu betrachten. Sollte es jemals dazu kommen, daß niemand mehr zu dieser Unterscheidung fähig wäre, daß Menschenwerk und Maschinenwerk tatsächlich identisch geworden wären – dann wäre nicht sowohl das Kunst-Verständnis tot als vielmehr die Kunst; und sie wäre dann nicht an der Reproduktion gestorben." (Emphasis in the original.)


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II modelling

Modelling is said to be a core activity in the digital humanities. In order to understand the methodological and epistemological implications, this chapter explores the history and theory of modelling in science as well as in the humanities. It focuses on the model-*of* versus model-*for* distinction, the issue of conflating patterns with structures, and the question how we might arrive at a 'model of model-being'. All of this is discussed against a background of modelling discourses that are rarely referenced, particularly from the context of cybernetics as they influenced the philosophy of science in the GDR and USSR in the 1960s and 1970s. Another important inquiry centres on the epistemology of the humanities in the German hermeneutical tradition and asks what role *Einfühlung* ('feeling-into' – empathy – capacity for perspective-taking) might play in the scholarship of modelling.

All models are approximations. Assumptions, whether implied or clearly stated, are never exactly true. All models are wrong, but some models are useful. So the question you need to ask is not 'Is the model true?' (it never is) but 'Is the model good enough for this particular application?'

George E. P. Box, Alberto Luceño and María Del Carmen Paniagua-Quiñones, *Statistical Control by Monitoring and Adjustment*, Hoboken, New Jersey: Wiley, ²2009, 61 [originally published 1997].

II

modelling as a method
in the digital humanities

Conversations about 'models' and 'modelling' are ubiquitous in science.[1] This could be observed during the COVID-19 pandemic: "We're building simplified representations of reality. Models are not crystal balls," a leading scientist was quoted as saying in a special report in *Nature* in April 2020, during the height of the initial response, evidently trying to manage some of the expectations that policy-makers were directing at their scientific advisors.[2] The type of modelling that was under public scrutiny at the time can be referred to as 'epidemiological modelling'. Typically, this implies either equation-based or agent-based modelling. Both can be variations of computational modelling that simulates future scenarios and projects outcomes by using mathematical models to extrapolate from existing health data. As might be expected, predicting developments is not an act of divination and therefore involves assumptions and uncertainties. In a fast-developing epidemiological situation, this issue may be exacerbated by the fact that "some crucial information remains hidden from the modellers"[3] (referring to real-time accurate

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1 In terms of popular science, the first example that might come to mind is Stephen Hawking's exploration of 'model-dependent realism' as a way of scientific reasoning, cf. Stephen Hawking and Leonard Mlodinow, *The Grand Design*, New York: Bantam Books, 2010, 7.

2 For a reflection on this that occurred early on, see David Adam, "Modelling the Pandemic: The Simulations Driving the World's Response to COVID-19," in: *Nature* 580 (2020), 316–318, online: <https://doi.org/10.1038/d41586-020-01003-6>. Quote from Neil Ferguson ibid., 317.

3 Ibid., 318.

data on infection rates and circulation) and that it is difficult to obtain "data [...] against which to judge the model's predictions."[4]

While this represents only a specific example of a specific type of scientific modelling, far removed from the topic of this book, it already indicates the wide range of disciplines within which the theory and practice of modelling are of relevance. A famous quote by Nelson Goodman is often cited to illustrate this point:

> Few terms are used in popular and scientific discourse more promiscuously than 'model'. A model is something to be admired or emulated, a pattern, a case in point, a type, a prototype, a specimen, a mock-up, a mathematical description—almost anything from a naked blonde to a quadratic equation—and may bear to what it models almost any relation of symbolization.[5]

If we are to agree with Goodman's observation, then his statement begs the question how one might discuss models and modelling at all, within science and beyond science. How are we to move towards a specific understanding of modelling in the digital humanities and in digital scholarly editing if we cannot proceed from a shared, generalized understanding? Authors like Willard McCarty have long been engaged in laying the groundwork for answering that question[6] and we will return

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4 Adam 2020, 318.

5 Nelson Goodman, *Languages of Art: An Approach to a Theory of Symbols*, Indianapolis: Hackett, ²1976, 171.

6 See his chapter on modelling in Willard McCarty, *Humanities Computing*, Basingstoke [et al.]: Palgrave Macmillan, 2005, 20–72, as well as more recent literature, including Willard McCarty, "Modelling What There Is: Ontologising in a Multidimensional World," in: *Historical Social Research* suppl. 31 (2018), 33–45, online: <https://doi.org/10.12759/hsr.suppl.31.2018.33-45>, and Willard McCarty, "Modeling, Ontology, and Wild Thought: Toward an Anthropology of the Artificially Intelligent," in: *Science in the Forest, Science in the Past*, ed. by Geoffrey E. R. Lloyd and Aparecida Vilaça, London: HAU Books, 2020, 209–236, here esp. 210–212 [confusingly, a collected volume with a similar title, *Science in the Forest, Science in the Past: Further Interdisciplinary Explorations*, ed. by the same editors together with Willard McCarty, was published by Routledge in 2022 with a similar but different list of contributions which, in turn, had been first published in vol. 46/3 of *Interdisciplinary Science Reviews* (2021); it appears that the volumes are based on a series of successive workshops; this as a bibliographical side note].

to those discourses specific to the digital humanities[7] – if they are specific, which could be subject for debate – but first it would seem prudent to try and find a more universal approach to the topic which, in my case, always means a historically informed one. It is also interesting to think, however briefly, about the discursive function of the terminology that we operate with.

Etymologically, the word 'model' shares a common root with many of its equivalents in other languages such as *Modell* (German), *modèle* (French), *modello* (Italian), or *модель* (Russian). According to the research literature, it goes back to the Vulgar Latin *modellus*, in itself derived from the diminutive *modulus* for *modus*, meaning 'measure' or 'scale'.[8] Originally, the word found its way into Old High German as *modul*, into Middle High German as *model* and into English as 'mould', among other European languages.[9] Around the 16th century, it was reintroduced via the Old Italian *modello*, specifically referring to models in architecture and art (sculpturing).[10] The meaning was that of a pattern or form, the mould in which to pour plaster, the name of flowerbed figurines designed for French gardens,[11] even the types intended for print

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7 Other relevant authors would be, among others, Arianna Ciula, Øyvind Eide, and Cristina Marras. See, to start with, Øyvind Eide, "Modelling and Networks in Digital Humanities," in: *Routledge International Handbook of Research Methods in Digital Humanities*, ed. by Kristen Schuster and Stuart Dunn, London / New York: Routledge, 2020, 91–108, online: <https://doi.org/10.4324/9780429777028>; Ciula [et al.] eds. 2018; Arianna Ciula and Øyvind Eide, "Modelling in Digital Humanities: Signs in Context," in: *Digital Scholarship in the Humanities* 32 suppl. 1 (2017), 33–46, online: <https://doi.org/10.1093/llc/fqw045>; Arianna Ciula and Cristina Marras, "Circling Around Texts and Language: Towards 'Pragmatic Modelling' in Digital Humanities," in: *Digital Humanities Quarterly* 10/3 (2016), online: <http://www.digitalhumanities.org/dhq/vol/10/3/000258/000258.html> (accessed 12 February 2023).

8 Cf. Walther von Wartburg, 'modulus,' in: *FEW* (Französisches Etymologisches Wörterbuch; vol. 6/3: Mobilis–Myxa), Basel [et al.]: Zbinden [et al.], 1966, 14–19, esp. 18–19, and Herbert Stachowiak, *Allgemeine Modelltheorie*, Wien [et al.]: Springer, 1973, 129, fn. 2.

9 Cf. ibid. Today still recognizable in the German verb *modeln* = 'to form'.

10 Cf. Jacob Grimm and Wilhelm Grimm, 'Modell,' in: *DWB* (Deutsches Wörterbuch; vol. 12), Leipzig: Hirzel, 1885, col. 2439f., online: <http://www.woerterbuchnetz.de/DWB?lemma=modell> (accessed 7 February 2023). Cf. also Bernd Mahr, "Ein Modell des Modellseins: Ein Beitrag zur Aufklärung des Modellbegriffs," in: *Modelle*, ed. by Ulrich Dirks and Eberhard Knobloch, Frankfurt am Main [et al.]: Peter Lang, 2008, 187–220, here 191.

11 Cf. Grimm and Grimm 1885.

because they were formed by pouring metal into casting moulds that corresponded with letters.[12] The diminutive origin of the word reflected its usage where it denoted the formation of an exemplary copy of an original on a smaller scale.

Already, in this linguistic evolution, we can sense some of the activities that we still associate with models in a scientific context to this day: the forming and shaping of something *in the image of* something else, sometimes even tangibly with our own hands; the creation of prototypes, of blueprints, of something *in the image of which* something else is created; the representation of something not *as is* but rather *as-if*, on a different scale, in a simplified form, in an idealized form, in a manipulable form; the manifestation of a representation in a concrete object or visualization where certain elements and their relation to each other are highlighted.

A.
MODELS IN SCIENCE

When we go back in history and apply this terminology to describe phenomena that may not have been described thusly at the time – although it should be noted that Bernd Mahr has argued that the first tenuously related use of *modulus* can be traced to the architectural writings of Vitruvius, 1st century BC[13] –, then we find that modelling becomes an anthropological constant in the sense that it seems to have been a vital step in processes of creation for as long as humans have sought to re-create or pre-create a more all-encompassing original in reduced form to measure, scale, and test its properties and dimensions and how they relate to each other or, simply, to evaluate it aesthetically. A comprehensive cultural history of models and the practice of modelling has yet to be written which is why no one has stated with any certainty when the transformation from models as mere representations to models as modes of understanding occurred; if such a transformation

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12 Cf. Wartburg 1966, 19.
13 Cf. Mahr 2008, 190.

occurred.[14] Bernd Mahr has suggested that there was a "progression [...] from a concrete technique to the methodical abstraction"[15] or what we might in academic language call a progression from models rooted in *tékhnē* to models servicing the acquirement of *epistēmē*. What we can state and observe for certain are dates that emerge from the stream of time because they are associated with something that was deemed important then or came to be regarded as such later on and therefore draws our attention. One such date is the year 1596 in which Johannes Kepler published his first book *Prodromus dissertationum cosmographicarum, continens mysterium cosmographicum*.[16] In this book, he presented his vision of the solar system and the planets within in the form of a model. This model was not a material model but a two-dimensional graphical depiction of a three-dimensional model that one can imagine as physical and mobile instead, even though it represents an abstracted vision of that which it approximates.

If we take diagrammatic representations of knowledge into account, then we must date the use of models as a way of furthering the comprehension and insight into a matter even earlier, at the very least into the 12th century when diagrammatic works such as the *Liber figurarum* by Joachim of Fiore or the *Compendium historiae in genealogia Christi* by Peter of Poitiers achieved widespread circulation.[17] It would be possible

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14 One of the studies that arguably comes closest and certainly counts among the most comprehensive is still Roland Müller, "Zur Geschichte des Modelldenkens und des Modellbegriffs," in: *Modelle: Konstruktion der Wirklichkeit*, ed. by Herbert Stachowiak, München: Fink, 1983, 17–86.

15 "Entwicklung [...] von einer konkreten Technik hin zu dem methodischen Abstraktum" (Mahr 2008, 190). See also Bernd Mahr, "Modellieren: Beobachtungen und Gedanken zur Geschichte des Modellbegriffs," in: *Bild, Schrift, Zahl*, ed. by Sybille Krämer and Horst Bredekamp, München: Fink, 2003, 59–86.

16 Title often shortened to *Mysterium cosmographicum*. For the full title and a digitized version, see Johannes Kepler, *Prodromus dissertationum cosmographicarum* [...], Tübingen: Georg Gruppenbach, 1596, [digitized version available at ETH Library Zürich, RAR 1367: 1, online: <https://doi.org/10.3931/e-rara-445>]. With regard to that print, see also the entry on the 'Mysterium cosmographicum,' in: *… die Wahrheit in den Wissenschaften suchen: Buchschätze der ETH-Bibliothek aus vier Jahrhunderten*, ed. by Rudolf Mumenthaler, Wolfram Neubauer and Margit Unser, Zürich: ETH-Bibliothek, 2003, 66f.

17 See Andrea Worm, *Geschichte und Weltordnung: Graphische Modelle von Zeit und Raum in Universalchroniken vor 1500*, Berlin: Deutscher Verlag für Kunstwissenschaft,

to name many more examples from other contexts and time periods here[18] but as it is not the purpose of this book to write that cultural history and ruminate on the origins of modelling as a scholarly practice, suffice it to say that once we enter the 'modern era' (or, in the German term, the *Neuzeit*), models and modelling are fully embedded in or fully starting to be embedded in scholarship, albeit not necessarily featuring as objects of discussion themselves, in an explicit meta-methodological view.

One science that showcases how models came to take on a variety of meanings and also brings us closer to issues of models and modelling in humanities computing is mathematics. To name but two examples: In the 19th century, mathematicians like Julius Plücker, Felix Klein, and Ernst Kummer began to take an interest in geometrical models of surfaces;[19] these were actively built, such as in Plücker's case out of wood,[20] and referred to as 'models' (or rather the German equivalent *Modelle*).[21]

Later, in the 1950s, Polish logician Alfred Tarski established a semantic model theory based on his influential *Wahrheitsbegriff* ('definition of truth') that he had first developed in the 1930s.[22] The impetus was to

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2021; Alexander Patschovsky (Ed.), *Die Bildwelt der Diagramme Joachims von Fiore: Zur Medialität religiös-politischer Programme im Mittelalter*, Ostfildern: Thorbecke, 2003; and Adam S. Cohen, "Diagramming the Diagrammatic: Twelfth-Century Europe," in: *The Visualization of Knowledge in Medieval and Early Modern Europe* (Studies in the Visual Cultures of the Middle Ages; vol. 16), ed. by Marcia Kupfer, Adam S. Cohen and Jeffrey Howard Chajes, Turnhout: Brepols, 2020, 383–404. See also Eckart Conrad Lutz, Vera Jerjen and Christine Putzo (Eds.), *Diagramm und Text: Diagrammatische Strukturen und die Dynamisierung von Wissen und Erfahrung*, Wiesbaden: Reichert, 2014, and Charlotte Bigg, "Diagrams," in: *A Companion to the History of Science*, ed. by Bernard Lightman, Chichester: John Wiley & Sons, 2016, 557–571.

18 See, for example, on the use of 3D models to study phenomena since antiquity, Joshua Nall and Liba Taub, "Three-Dimensional Models," in: *A Companion to the History of Science*, ed. by Bernard Lightman, Chichester: John Wiley & Sons, 2016, 572–586.

19 Cf. David E. Rowe, *A Richer Picture of Mathematics: The Göttingen Tradition and Beyond*, Cham: Springer, 2018, 81–94.

20 For images of these models, see the 'Plücker Collection' of the *London Mathematical Society*, <http://www.lms.ac.uk/archive/plucker-collection> (accessed 7 February 2023). As mentioned there, the models are also described in Arthur Cayley, "On Plücker's Models of Certain Quartic Surfaces," in: *Proceedings of the London Mathematical Society* s1–3/1 (1869), 281–285, online: <https://doi.org/10.1112/plms/s1-3.1.281>.

21 See the contemporary letters reproduced in Rowe 2018, 92–94.

22 Cf. Anita Burdman Feferman and Solomon Feferman, *Alfred Tarski: Life and Logic*, Cambridge: Cambridge University Press, 2004, 109f.

represent theories and their axioms with the help of formal languages. Some points of interest are summarized in the *Stanford Encyclopedia of Philosophy*:

> A *theory* is taken to be a (usually deductively closed) set of sentences in a formal language. A *model* is a structure [...] that makes all sentences of a theory true when its symbols are interpreted as referring to objects, relations, or functions of a structure. The structure is a *model of* the theory in the sense that it is correctly described by the theory [...]. Logical models are sometimes also referred to as 'models of theory' to indicate that they are interpretations of an abstract formal system.[23]

Interestingly enough, Tarski's semantic concept underlies many of the assumptions prevalent in computer science, typically without direct reference to Tarski.[24] Discussions of languages are generally discussions of mathematical, especially set-theoretical, and logical expressions in this context and they have to be understood as a part of correspondence theory, where, in the case of Tarski, an object language and a meta language are differentiated; semantic objects are defined for the former in the latter.[25] The question of correspondence is a question of relation: Do we relate computational information processing to 'reality' or to the metalinguistic mathematical expressions (e.g. functions) ordering that

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23 Roman Frigg and Stephan Hartmann, 'Models in Science,' in: *The Stanford Encyclopedia of Philosophy* (Spring 2020 edition), ed. by Edward N. Zalta, online: <https://plato.stanford.edu/archives/spr2020/entries/models-science/> (accessed 11 February 2023). Emphasis in the original.

24 Cf. Martin Fischer, "Bedeutung und Metasprache: Alfred Tarski," in: *Abbild oder Konstruktion: Modellierungsperspektiven in der Informatik* (KIT Report; vol. 125), ed. by Martin Fischer, Gernot Grube and Fanny-Michaela Reisin, Berlin: Technische Universität, 1995, 35–40, here 37. See also Solomon Feferman, "Tarski's Influence on Computer Science," in: *The Lvov-Warsaw School: Past and Present* (Studies in Universal Logic), ed. by Ángel Garrido and Urszula Wybraniec-Skardowska, Cham: Birkhäuser, 2018, 391–404, online: <https://doi.org/10.1007/978-3-319-65430-0_29> [originally published in *Logical Methods in Computer Science* 2/3 (2006), [1–13], online: <https://doi.org/10.2168/LMCS-2(3:6)2006>].

25 Cf. Christiane Funken, *Modellierung der Welt: Wissenssoziologische Studien zur Software-Entwicklung*, Wiesbaden: Springer Fachmedien, 2001, 97.

reality?[26] The latter would seem uncontroversial, but it does leave one other question unanswered: How do these mathematical expressions themselves relate to reality?

Discussing this would be well outside the expertise of this book but it points in a direction that might be described as a debate over representational modelling (i.e. that the model ought to depict – *abbilden* – a portion of reality such that both can be compared) versus constructivist modelling (i.e. that that which is modelled is constituted through being modelled and does not exist independently from it): "If modelling, in the representational view, is the construction of the model, then it is, in the constructivist view, also the construction of the original."[27]

These perspectives have been explored in German research literature in the tradition of Herbert Stachowiak whom we will return to in a later section. It would be very easy to get lost in any of these questions as they are all suitably interesting but the pertinent issue at hand is how all of this relates to the digital humanities (as a scientific or otherwise scholarly discipline). It should be noted, for example, after shining a very brief spotlight on modelling in mathematics, from Plücker to Tarski, that, at least *prima facie*, the move from craftsmanship to abstraction that is assumed to have occurred in the practice of modelling throughout its overall history seems to be mirrored thus in one single field of study, albeit in its different subdivisions. If the digital humanities are indeed as predominantly focused on tools as is sometimes alleged,[28] one might

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26 Cf. Fischer 1995, 38.

27 Gernot Grube, "Modellierung in der Informatik," in: *Abbild oder Konstruktion: Modellierungsperspektiven in der Informatik* (KIT Report; vol. 125), ed. by Martin Fischer, Gernot Grube and Fanny-Michaela Reisin, Berlin: Technische Universität, 1995, 3–24, here 7; original: "Ist in der Abbildperspektive Modellierung die Konstruktion des Modells, so ist in der Konstruktionsperspektive Modellierung ebenso die Konstruktion des Originals."

28 And which subsequently has been grounds for a call for 'tool criticism', cf. Marijn Koolen, Jasmijn van Gorp and Jacco van Ossenbruggen, "Toward a Model for Digital Tool Criticism: Reflection as Integrative Practice," in: *Digital Scholarship in the Humanities* 34/2 (2019), 368–385, online: <https://doi.org/10.1093/llc/fqy048>. See also the way in which the proliferation of tools and a focus on tools in the digital humanities has been discussed as 'tool-based thinking' in connection with the verdict: "For better and for worse, the field of digital humanities is frequently understood as one in which its practitioners use tools." (Francesca Giannetti, "Against the Grain: Reading for

surmise that they could be destined for a similar trajectory: That the craftsmanship of data modelling, 3D modelling, in short: computationally influenced implementations of specific types of modelling, is starting to be – or in any case must be – supplemented by an awareness of the higher logic of things. Only then may we begin to understand what modelling as an activity can achieve in and for scholarship in this particular field.

B.
ABBILD AND *VORBILD*

The starting point of any inquiry into modelling theory as seen in the digital humanities is still Willard McCarty's aforementioned chapter on modelling in his *Humanities Computing* (2005) monograph, which, despite his more recent publications, represents his most comprehensive treatment of the topic. McCarty chooses a "philological and philosophical approach"[29] to explore models and modelling in a humanities computing context, quoting Michael Mahoney as saying: "In a real sense, [...] computers came into being for the sake of modelling."[30] To begin with, McCarty defines a model as "a representation of something for purposes of study, or a design for realizing something new"[31] and modelling as "the heuristic process of constructing and manipulating models."[32] In that, he adheres to Clifford Geertz and his differentiation between a model-*of* and a model-*for*.[33] This introduces a few questions that the literature has, to my knowledge, not yet fully addressed. McCarty acknowledges that every model *of* something is also a model *for* something and vice versa and states that "the model *of* exists to tell us what we do

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the Challenges of Collaborative Digital Humanities Pedagogy," in: *The Digital Humanities: Implications for Librarians, Libraries, and Librarianship*, ed. by Christopher Millson-Martula and Kevin Gunn, London / New York: Routledge, 2018, 123–135, here 129; for the section on 'tool-based thinking' see 129f.)

29 McCarty 2005, 21.

30 Ibid., 22.

31 McCarty 2005, 24. Original italicized.

32 Ibid. Original italicized.

33 Cf. McCarty 2005, 24.

not know [and] the model *for* to give us what we do not yet have."[34] But the implications that this has could stand further commentary. First of all: How can a model *of* something tell us what we do not know rather than describing what we *do* know, seeing as we are the ones creating the model and determining what it represents? Secondly: How can a model *for* something give us what we do not yet have rather than visualizing a conception that we *do* have and on the basis of which we can take further *action*? (It is, for example, entirely imaginable that we could skip the step of creating a model-for and still arrive at that which we do not yet have since it is not the model that realizes something; these discussions entirely depend, of course, on the question of whether a model that only exists as a conception or idea in our heads without being expressed as a clearly delineated model in some way, shape, or form is a *model* in any useful sense of the word and not just a thought.) One might argue that by modelling something, we may embark on a process of realizing all that we know and thereby *discover* what we do not know but upon discovery, it is not unknown anymore and therefore it is not for the model to tell us what we do not know. It is for us to tell the model (and thereby ourselves) what we know. Furthermore, McCarty's definition seems to be implicitly premised on the assumption that all that can be known can be modelled (although I suspect that he would not subscribe to that view) or that models can, at the very least, encompass a certain domain of structured and related information that is equated with knowledge as such. The simple question looming over this is: Whose and for whom?

Other modelling theorists, such as mathematician Bernd Mahr, have spoken of the model-of and model-for distinction in a context of a general model theory and they have been criticized for its lack of precision.[35]

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34 Ibid.

35 For a summary of Bernd Mahr's model theory, see his last article on the topic, Bernd Mahr, "Modelle und ihre Befragbarkeit: Grundlagen einer allgemeinen Modelltheorie," in: *Erwägen, Wissen, Ethik* 26/3 (2015), 329–342; for English-language versions of his thoughts on modelling, see Bernd Mahr, "Information Science and the Logic of Models," in: *Software & Systems Modeling* 8 (2009), 365–383, online: <https://doi.org/10.1007/s10270-009-0119-2>, and Bernd Mahr, "On the Epistemology of Models," in: *Rethinking Epistemology* (Berlin Studies in Knowledge Research; vol. 1), ed. by Günter Abel and James Conant, Berlin / Boston: De Gruyter, 2012, 301–352, online: <https://doi.org/10.1515/9783110253573.301>. For criticism of his approach to a gener-

There are other differentiations: between descriptive and prescriptive,[36] denotative and exemplary,[37] logical and representational,[38] to name a few. Whether these terms are seen as useful will differ depending on the disciplinary context. For the purposes of the discourse in the digital humanities, I propose that it might be helpful to introduce yet another differentiation to the discussion as carried out in the English language: *Abbild* ('the image of' something in the sense of a representational likeness), *Vorbild* ('in the image of which' something is done), and *Urbild* ('original image' – which I mention for completeness but do not intend to elaborate on as it speaks for itself). These are terms that regularly feature in the German literature about models in the tradition of the aforementioned Herbert Stachowiak without having yet, in this combination, come to the fore on their own in more recent discussions.[39] In

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al model theory, see the other articles in EWE issue 26/3 which are designed as critical responses on purpose; the most scathing and uncharitable of these responses is Christopher von Bülow, "Ein Modellfall eines schlechten Aufsatzes," in: *Erwägen, Wissen, Ethik* 26/3 (2015), 354–357. With regard to the model-of and model-for distinction, see in particular Herbert Neuendorf, "Die Frage nach dem Original: Modelle 'von etwas' und 'für etwas'," in: *Erwägen, Wissen, Ethik* 26/3 (2015), 394–396. Due to his passing, Bernd Mahr's reply to the critiques is only fragmentary, see Bernd Mahr, "Replik," in: *Erwägen, Wissen, Ethik* 26/3 (2015), 425–433.

36 Cf. Neuendorf 2015, *passim*.

37 We find this type of differentiation between a model as an exemplar and a model that denotes in Goodman ²1976, 171f.

38 Cf. Frigg and Hartmann 2020.

39 See, by way of example, Ivor Nissen and Bernhard Thalheim, "Modelle, Modellieren, Modellierung: Eine Kieler Begriffsbestimmung," in: *Wissenschaft und Kunst der Modellierung: Kieler Zugang zur Definition, Nutzung und Zukunft* (Philosophische Analyse; vol. 64), ed. by Bernhard Thalheim and Ivor Nissen, Berlin / Boston: De Gruyter, 2015, 29–36, here 34f., online: <https://doi.org/10.1515/9781501501234-003>. Both Herbert Stachowiak and in particular Roland Müller employ the terms at length and very explicitly in connection with each other and with model theory; cf. Müller 1983, esp. 20f., 24–28 and 62f., and Herbert Stachowiak, "Erkenntnisstufen zum Systematischen Neopragmatismus und zur Allgemeinen Modelltheorie," in: *Modelle: Konstruktion der Wirklichkeit*, ed. by Herbert Stachowiak, München: Fink, 1983, 87–146, here esp. 89. As Benjamin Rathgeber points out, Mathias Gutmann's use of *Abbild* and *Vorbild* with regard to models can also be cited in this context and it would seem to confirm that there is often an equation made between *Abbild* and *Vorbild* models and models-of and models-for, cf. Benjamin Rathgeber, *Modellbildung in den Kognitionswissenschaften* (Hermeneutik und Anthropologie; vol. 4), Münster: LIT, 2011, 92f., and Mathias Gutmann, *Die Evolutionstheorie und ihr Gegenstand: Beitrag der methodischen Philosophie zu einer konstruktiven Theorie der Evolution* (Studien zur Theorie der Biologie; vol. 1), Berlin: VBW, 1996, 176. For a discussion of Stachowiak's contribution to modelling

a digital humanities context and more specifically the context of digital art history, for example, Georg Schelbert writes about the *abbildendes Modell* (in his sense perhaps best translated as 'depicting model'), contrasts it with or rather adds to it the *konzeptionelles Modell* ('conceptual model') and suggests to consider the *digitales Modell* ('digital model') as an opportunity for a synthesis of *Bild* ('picture' or 'image'), concept, and information.[40] Why, however, is a conceptual model not one that in itself depicts that which it models? A conceptual model is necessarily *abbildend* in the sense that it is necessarily the result of a cognitive process which creates *an image of* something else, even if that image is ideational and reduced in that which it reproduces. Schelbert's *abbildendes Modell* is rather specifically a pictorial or similarly realized model that mirrors certain spatial or visual qualities of that which it depicts, a representation in the vein of an architectural model.[41] One could argue that there are models that depict and models that do not, but that argument necessarily hinges on an emphasis of a *primary* function rather than a fundamental difference, even if only in terminology, or else it creates a false dichotomy. (Note that the primary function of a model is contingent on what the model functions as in a given moment and for a given spectator or user perceiving the model as a model.) It might therefore not be sensible to discuss the *Abbild* qualities of a model without discussing its *Vorbild* qualities and vice versa, much like discussing models-of and models-for, only that in the case of the *Abbild* model and *Vorbild* model, model-of and model-for are made more precise since *Abbild* and *Vorbild* focus our attention on the visuality and directionality of conception, mentally – which is also to say *conceptually* – or otherwise: A model that is primarily *abbildend* seeks to distill an essence – that is to say, it seeks to

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with regard to an *Abbildtheorie* commonly espoused in German literature, see Mahr 2003, 79–81.

40 Cf. Georg Schelbert, "Ein Modell ist ein Modell ist ein Modell: Brückenschläge in der Digitalität," in: *Der Modelle Tugend 2.0: Digitale 3D-Rekonstruktion als virtueller Raum der architekturhistorischen Forschung* (Computing in Art and Architecture; vol. 2), ed. by Piotr Kuroczyński, Mieke Pfarr-Harfst and Sander Münster, Heidelberg: arthistoricum.net, 2019, 136–153, online: <https://doi.org/10.11588/arthistoricum.515.c7449>.

41 Cf. ibid., 139–143.

identify a *structure* in that which it represents and it must do so by respecting the *relationality* and, depending on the context, *scalability* of its elements; the scalability is obviously of importance in cases where a certain phenomenon or behaviour from an 'original' environment ought to be emulated in the modelled representation; the more abstract the model, the more it becomes an essential but, to speak with George E. P. Box et al., arguably less 'true' representation,[42] if the truth of a representation is measured by its proximity to that which it models. Such a model *in the image of* that which it models will be, obviously, illustrative, and it might, when a factor of time and other variables are added, become simulative which is also to say speculative, but it will not, in interpretation of McCarty's meaning, serve the creation of something tangibly new *in its image*. It can be a scientific model or a model employed in a context of science but it does not have to be and the criteria for its *Wissenschaftlichkeit* ('scientificity') will differ from discipline to discipline and the varying requirements for scholarly argument and rigour. In that, models are no different to other methodology and other uses of language, vis-à-vis a communication of knowledge in science and scholarship. We do not need to formulate general measures of 'scientificity' for a general theory of models so much as we need to apply those that already exist, where they exist; it could be argued, for example, that the use of simulations in historical studies is an inappropriate and objectionable approach because it falls into a similar category as counterfactual history, with all the caveats and criticisms that apply to that.[43] One simulation may

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42 Cf. George E. P. Box, Alberto Luceño and María Del Carmen Paniagua-Quiñones, *Statistical Control by Monitoring and Adjustment*, Hoboken, New Jersey: Wiley, ²2009, 61 [originally published 1997].

43 One example for the use of historical simulations that Schelbert 2019, 148, also refers to is the *Venice Time Machine* project in which Frédéric Kaplan, an expert for artificial intelligence, was involved in a leading capacity and on which he gave a TED talk; see, Frédéric Kaplan, "How to Build an Information Time Machine," presentation at *TEDxCaFoscariU* (June 2013), online: <https://www.ted.com/talks/frederic_kaplan_how_to_build_an_information_time_machine> (accessed 8 February 2023). It might be that these types of projects have led to an unwarranted amount of scrutiny. Some have argued that there is a case to be made for the usefulness of simulations in the historical sciences, cf. Leif Scheuermann, "Geschichte der Simulation / Simulation der Geschichte: Eine Einführung," in: *Digital Classics Online* 6/1 (2020), online: <https://doi.org/10.11588/dco.0.0.73395>. Their usefulness would obviously depend on the data

be grounded in more evidence than another and if one wishes to argue so for their particular case, they may do that, as with any other kind of argument, and they may be rejected on the basis of the support offered for it, as with any other kind of argument. Generally speaking – and this does apply to scholarship in general –, we must not create a fallacy akin to the notion 'when a scholar does it, that means it is scholarly', all the while we should also not assume to be able to accommodate every possible scenario of scholarly or scientific modelling with a shared rulebook.

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that they are based on, the behaviour that they ought to simulate (natural phenomena or human actions, to name only two), and the conclusions drawn from them. In that sense, one might call them *extrafactual* – building on that which is known and extrapolating within reasonable bounds. It would be naïve, however, to believe that there is no transition from the extrafactual to the counterfactual; and these can be difficult to separate. On the topic of counterfactual history or 'virtual history' which has been championed in particular by the historian Niall Ferguson and predates digital history or at least should not be conflated with it, even though the same critiques may apply here, see Richard J. Evans, *Altered Pasts: Counterfactuals in History*, Waltham: Brandeis University Press, 2014. In short, if one views the humanities as evidence-oriented sciences (here in the sense of *Wissenschaften*), then it stands to reason that arguments centred around the entertainment of speculative thought experiments about 'what might have happened' rather than being grounded in an analysis and understanding of the evidence of 'what did happen' or 'what do we think did happen' are inadmissible as scholarly arguments because they cannot be argued against, given the lack of a body of source materials for these 'alternate' scenarios which makes it impossible to verify or falsify any number of claims. That historiography involves speculative elements at all is another debate but the difference in this case would be that in 'virtual history', speculation is used to argue *contra* the existing evidence, not to plausibly bridge lacunae in the tradition. Whether one wants to entertain counterfactual thought experiments to exercise their own mental agility as Juliane Schiel, a Ferguson student, has implied is a matter of opinion but would not seem to legitimize 'virtual history' in any way from a scholarly point of view which must, as a communal effort, always take the *Argumentierbarkeit* ('argumentability') of the matter at hand into account and that *Argumentierbarkeit* must be, as stated, necessarily evidence-oriented where it can be evidence-oriented; a historian who argues *against* something for which there is not only an absence of evidence but a contradiction of evidence (that is to say, on the basis of alternative historiography contradicting what is known about history) will not have made an argument *for* something for which there is evidence, especially given that the tradition of evidence is largely arbitrary and alternative scenarios hinge on too many unknown variables to be plausibly designed. Still, for arguments for 'virtual history' – including the remarks by Juliane Schiel – see the collected volume Ronald Wenzlhuemer (Ed.), *Counterfactual Thinking as a Scientific Method* (Historical Social Research; special issue 34.2), Köln: Gesis, 2009. For more arguments in favour of 'virtual history', see Alexander Demandt, *Ungeschehene Geschichte: Ein Traktat über die Frage: Was wäre geschehen, wenn …?* Göttingen: Vandenhoeck & Ruprecht, 1986.

Abbild models may be scholarly insofar as creating them lends support to a scholarly argument or insofar as they may be used to illustrate a scholarly argument. Whether to explain, showcase, study, highlight elements and their relation to each other, the difference between a conceptual *Abbild* model and a concept as such is that the model will have identified elements and structures within the concept and it will have sought to depict them in a way that accurately maps the relations of these elements or rather accurately maps *our understanding* of the relations of these elements, which will have been identified not because they are the *only* identifiable elements and relations but because they are the identifiable elements and relations for the *intents* and *purposes* of a particular study from a particular point of view; and depending on the discipline, the accuracy of depiction may be verifiable through calculation and an observation of a congruence of *properties*, admitting for scale and other factors of concentration; this may, however, not necessarily apply to models in the humanities.

As far as the notion of an *Abbild* model is concerned, we may furthermore invoke Ludwig Wittgenstein who wrote, and I quote selectively:

> 2.1 Wir machen uns Bilder der Tatsachen. [...]
> 2.12 Das Bild ist ein Modell der Wirklichkeit.
> 2.13 Den Gegenständen entsprechen im Bilde die Elemente des Bildes. [...]
> 2.15 Daß sich die Elemente des Bildes in bestimmter Art und Weise zu einander verhalten, stellt vor, daß sich die Sachen so zu einander verhalten. Dieser Zusammenhang der Elemente des Bildes heiße seine Struktur und ihre Möglichkeit seine Form der Abbildung.
> 2.151 Die Form der Abbildung ist die Möglichkeit, daß sich die Dinge so zu einander verhalten, wie die Elemente des Bildes.[44]

Wittgenstein's use of *Bild* to mean forms of thought and sentences has often been translated as 'picture' – this part of his work is, in fact, re-

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44 Ludwig Wittgenstein, "Logisch-Philosophische Abhandlung," in: *Annalen der Naturphilosophie* (vol. 14), ed. by Wilhelm Ostwald, Leipzig: Unesma, 1921, 185–262, here 202.

ferred to as 'picture theory' in English – but some have argued that it should rather be translated as 'image'.[45] This would seem to fit well with the argument developed thus far, namely that a model-of is an image *in the image of* and a model-for an image *in the image of which*... (left open-ended here on purpose).

Furthermore, in Wittgenstein's formulations we find many of the aspects from the model discussion paralleled: Not only does he explicitly state that the *Bild* is a model of reality, he also states that the elements in the *Bild*, that is to say, the elements in the model, correspond to the objects they are modelling, that the relation of elements to each other in a certain way imagines things relating to each other in such a way, that the relationship of elements in the model may be referred to as its structure and their being-possible as its form; in short: that the form of the *Abbildung* is the possibility that things may relate to each other as the elements in the *Bild* do. This line of inquiry might be worth pursuing in future formulations of general model theories.[46]

As may have become clear by the length of discussion dedicated to the notion of an *Abbild* model (and conceptual models as *Abbild* models), their role in scholarship is more immediately apparent since their creation, in order to be useful, necessarily requires a thorough understanding of that which they model and can be used as a way to generate further understanding or satisfy and consolidate a certain type of understand-

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45 Cf. Hidé Ishiguro, "The So-Called Picture Theory: Language and the World in Tractatus Logico-Philosophicus," in: *Wittgenstein: A Critical Reader*, ed. by Hans-Johann Glock, Oxford: Blackwell, 2001, 26–46.

46 Philosophers might find this observation naïve and digital humanists might view it as similarly obvious or misplaced, given that Willard McCarty quotes Wittgenstein at the beginning of his modelling chapter without discussing this connection, cf. McCarty 2005, 20. Already in the 1980s, in an aside, Roland Müller drew attention to the fact that Wittgenstein studied the dynamic models of German physicist Heinrich Hertz and referenced them in one of the few references that Wittgenstein made at all in his *Tractatus*, cf. Müller 1983, 56, and Wittgenstein 1921, 215 (I want to note that I arrived at Wittgenstein and the connection to his writing independently from Müller, which might be taken as a sign for a desideratum to incorporate Wittgenstein in literature on model theory outside of strictly philosophical discourses). See also, on that point, David G. Stern, *Wittgenstein on Mind and Language*, Oxford [et al.]: Oxford University Press, 1995, 36f., and, in general, Wolfgang Stegmüller, "A Model Theoretic Explication of Wittgenstein's Picture Theory," in: id., *Collected Papers on Epistemology, Philosophy of Science and History of Philosophy* (vol. 1), Dordrecht: Springer, 1977, 137–155.

ing. If we turn to *Vorbild* models, the question is rather: What follows from them? It is not enough that they be illustrative and it is not enough that they further understanding or, merely, represent a certain type of understanding of a thing or, if we might say so, a system of things. They do not unveil patterns so much as provide patterns for a task that will often involve a physical act of building or the use of physical tools. But could it be that, in the case of humanities computing, they rather involve the creation of meta-models *in the image of which* project-specific implementations in the form of, for example, data models ought to be undertaken, which in turn will provide the necessary output *for* processing? The CIDOC Conceptual Reference Model, CIDOC-CRM, and the conceptual model underlying the TEI come to mind.[47] They are, of course, not the only types of *Vorbild* models one could imagine in a humanities computing context, but they would seem to be obvious ones; and they illustrate that the distinction should not be drawn between *abbildendes Modell* and conceptual model or, on the other hand, conceptual model and *vorbildendes Modell*. Perhaps an argument could be made that a conceptual model in a certain context of humanities computing will become a *Vorbild* model when it is a universal model while

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47 See <http://www.cidoc-crm.org/> and <https://tei-c.org/> (both accessed 8 February 2023). On the model implicitly underlying the TEI, cf. James Cummings, "Opening the Book: Data Models and Distractions in Digital Scholarly Editing," in: *International Journal of Digital Humanities* 1/2 (2019), 179–193, here 185–189, online: <https://doi.org/10.1007/s42803-019-00016-6>. He states that "it is inaccurate to say that the TEI is a data model itself. Used properly, it is more of a framework for constructing and documenting data models for particular editorial projects" (ibid., 185). See also James Cummings, "A World of Difference: Myths and Misconceptions about the TEI," in: *Digital Scholarship in the Humanities* 34 suppl. 1 (2019), i58–i79, online: <https://doi.org/10.1093/llc/fqy071> ("It is important that it is the prose of the TEI Guidelines that is considered normative, not the current markup language they are written in or recommend, nor the schemas generated from them. What is written in the Guidelines in prose is more important than the rules of any generated schema. There are constraints in the prose of the TEI Guidelines (such as honest adherence to the abstract model) which will never be able to be modelled in any schema language." (ibid., i59)) and Desmond Schmidt, "Towards an Interoperable Digital Scholarly Edition," in: *Journal of the Text Encoding Initiative* 7 (2014), online: <https://doi.org/10.4000/jtei.979> ("[T]he purpose of the TEI Guidelines […] is to provide a general encoding scheme for texts of all types […]. TEI-encoded texts […] often form an important part of a digital scholarly edition (DSE), which may be defined as the modeling in the digital medium of the scholar's interactions with the text." (Ibid.))

it will become an *Abbild* model when it is a case-specific model; with the opposite being true for other types of models, where the universal model is an *Abbild* model because it uncovers or illustrates a principle, such as in Niels Bohr's atom model,[48] while a case-specific model may be a *Vorbild* model e.g. because it carries within it specific instructions for the creation of a specific object (in the broadest sense of the term). On the topic of universality and specificity, distinguished in that way, the research literature remains silent; this must, therefore, be regarded as a preliminary suggestion in need of more thought.

C.
COLD WAR REMNANTS

On a related note and for that matter, I will include the following brief section to draw attention to research literature that has gone unnoticed in the Anglophone discourse on modelling within the digital humanities. By highlighting several authors and their arguments before turning to models in the humanities in order to unearth a core issue for modelling concerns in humanities computing, I wish to make the case that a furtherance of debate depends on the influences it draws upon.

Many have written about modelling and some have been cited. We could name more: Max Black who wrote about models and metaphors in 1962;[49] Danielle and George Arthur Mihram who differentiated between physical, symbolic, and hybrid models in 1974;[50] Marx W. Wartofsky

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48 On the topic of which, see Helge Kragh, *Before Bohr: Theories of Atomic Structure 1850–1913* (Research Publications on Science Studies; vol. 10), Aarhus: Centre for Science Studies, University of Aarhus, 2010, and Helge Kragh, *The Early Reception of Bohr's Atomic Theory (1913–1915): A Preliminary Investigation* (Research Publications on Science Studies; vol. 9), Aarhus: Centre for Science Studies, University of Aarhus, 2010. See also Niels Bohr, "On the Constitution of Atoms and Molecules, Part I," in: *Philosophical Magazine* 26 (1913), 1–25 [part II 'Systems Containing Only a Single Nucleus' and part III 'Systems Containing Several Nuclei' in the same issue, 476–502 and 857–875 respectively]. See furthermore Niels Bohr, "Atomic Structure," in: *Nature* 107/2682 (1921), 104–107, online: <https://doi.org/10.1038/107104a0>.

49 See Max Black, *Models and Metaphors: Studies in Language and Philosophy*, Ithaca: Cornell University Press, 1962.

50 See Danielle Mihram and George Arthur Mihram, "Human Knowledge: The Role of Models, Metaphors, and Analogy," in: *International Journal of General Systems* 1 (1974), 41–60.

who published his writing on models in science in the form of an essay collection in 1979;[51] Mary S. Morgan and Margaret Morrison who heralded a communicative view on models in the late 1990s, arguing that models are 'autonomous mediators' and that "their relationship to theory draws our attention away from the processes of constructing models and manipulating them."[52] The list could go on. However, there is a noticeable lack of references in Anglophone literature to a number of important writers who presented extensive thoughts on modelling theory in the context of a general philosophy of science in the 1960s and 1970s. It would seem that this lack is rooted in a lack of translations which might be, in turn, rooted in the geopolitical situation of the time, at least in some cases. I speak, of course, in vaguely broad terms, of the East-West divide during the so-called 'Cold War'.[53] This is relevant here in a rather specific disciplinary context, namely the context of cybernetics.[54]

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51 See Marx W. Wartofsky, *Models: Representation and the Scientific Understanding*, ed. by Robert S. Cohen, Dordrecht: Springer, 1979.

52 Margaret Morrison and Mary S. Morgan, "Introduction," in: *Models as Mediators: Perspectives on Natural and Social Science*, ed. by Mary S. Morgan and Margaret Morrison, Cambridge: Cambridge University Press, 1999, 1–9, here 8. For a more recent communicative approach, see Christine Blätter, "Das Modell als Medium: Wissenschaftsphilosophische Überlegungen," in: *Wissenschaft und Kunst der Modellierung: Kieler Zugang zur Definition, Nutzung und Zukunft* (Philosophische Analyse; vol. 64), ed. by Bernhard Thalheim and Ivor Nissen, Berlin / Boston: De Gruyter, 2015, 107–138, online: <https://doi.org/10.1515/9781501501234-008>.

53 Observations like this must be treated with great caution during a literature review. The 1960s, for example, saw communication between scientists from the 'East' and the 'West' regardless of political divides and sometimes even prompted by political action, by which I mean in this case the period of the so-called 'Khrushchev Thaw' between the mid-1950s and mid-1960s, cf. Christopher D. Hollings, *Scientific Communication Across the Iron Curtain*, Cham [et al.]: Springer, 2015, 27–32. It is also likely that a lack of translations, regardless of the political situation, as well as a general myopia in Anglophone academia or, alternatively, a general 'historical amnesia' might have contributed to the situation we find ourselves in, where research traditions have been disrupted or never carried over.

54 Cybernetics gained popularity in the Soviet Union towards the end of the 1950s, around the time when the discipline became fragmented (e.g. branching off into artificial intelligence) in the USA, cf. Paul Erickson [et al.], *How Reason Almost Lost Its Mind: The Strange Career of Cold War Rationality*, Chicago / London: University of Chicago Press, 2013, 19f. For a general history of cybernetics, see Ronald R. Kline, *The Cybernetics Moment: Or Why We Call Our Age the Information Age*, Baltimore: John Hopkins University Press, 2015.

Cybernetics, as a field of study, is not a direct predecessor of the digital humanities, seeing as humanities computing existed concurrently; however, one might say that it is a sometimes-distant, sometimes-not-so-distant relative. The study of the relationship between 'man' and 'machine' was and is diversified across several disciplines but these boundaries between fields adjacent to computer science were never as clearly drawn as the different traditions might suggest; and today we see approaches and methods from the study of artificial intelligence, machine learning, computer linguistics, to name a few, mingle at digital humanities conferences and in digital humanities discourses.[55] A common denominator would seem to be a certain closeness to and relationship with notions that we also find in traditions such as structuralism and Russian formalism;[56] I note this because we briefly touched on this in **CHAPTER I**. The history and academic tradition of cybernetics – and I speak of its history and tradition since it arguably has been superseded as a discipline in its own right[57] – has not yet received widespread attention

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55 For information on the topics presented at digital humanities conferences from the 1960s to the present, see *The Index of Digital Humanities Conferences*, ed. by Scott B. Weingart [et al.], Carnegie Mellon University, 2020–present, <https://dh-abstracts.library.virginia.edu/> (accessed 8 February 2023) [also accessible under <https://doi.org/10.34666/k1de-j489>].

56 On the intersection between structuralism and computing history (especially cybernetics), see Bernard Dionysius Geoghegan, "Nine Pails of Ashes: Social Networks, Genocide, and the Structuralists' Database of Language," in: *History of Anthropology Review* 45 (2021), online: <https://histanthro.org/notes/nine-pails-of-ashes/> (accessed 13 January 2023). A conference on the relationship between Russian formalism and the digital humanities was held at the Stanford Humanities Center in 2015, see <https://digitalhumanities.stanford.edu/russian-formalism-digital-humanities/> (accessed 8 February 2023); for a conference report by one of the organizers, see Andrei Ustinov, "The Legacy of Russian Formalism and the Rise of the Digital Humanities," in: *Wiener Slavistisches Jahrbuch* 4 (2016), 287–289, online: <https://doi.org/10.13173/wienslavjahr.4.2016.0287>. Distant reading has been a particular focus of discussion in these contexts; cf. Basil Lvoff, "Distant Reading in Russian Formalism and Russian Formalism in Distant Reading," in: *Russian Literature* 122–123 (2021), 29–65, online: <https://doi.org/10.1016/j.ruslit.2021.07.003>. See also Basil Lvoff, *The Problem of Literary Development in Russian Formalism and Digital Humanities* (CUNY Academic Works), dissertation, 2020, online: <https://academicworks.cuny.edu/gc_etds/3881> (accessed 8 February 2023).

57 It is not entirely obsolete, as the continued existence of *The Cybernetics Society*, their conferences, and their publication of the journal *Kybernetes* would seem to indicate, for example. There, we can still find articles on modelling theory in recent years, such as

in a digital humanities context, despite tentative ventures in that direction by researchers such as, in the German discussion, Stefan Heßbrüggen-Walter and Toni Bernhart.[58] This is all the more surprising given that the closeness that existed at the time is also demonstrated in an Italian article from 1966, written by Roberto Busa, the traditionally appointed 'founding father' of the digital humanities, wherein he speculates about the impact that cybernetics (in his article in the sense of automation) will have on future societies and the human relationship with God.[59] The theological element does not negate the connection.

In the context of this book and this chapter, the field of cybernetics is not relevant in all its historical minutiae and particularities but rather in its promotion of a discourse on modelling theories, in which it seems to have notably eclipsed humanities computing in the concurrent time

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Maurice Yolles and Gerhard Fink, "A General Theory of Generic Modelling and Paradigm Shifts: Part 1 – The Fundamentals," in: *Kybernetes* 44/2 (2015), 283–298 [part 2 'Cybernetic Orders' in the same issue, 299–310, and part 3 'The Extension' in the same issue, 311–328]. This presence does not, however, equal the proliferation of the field in the latter half of the 20th century, nor would it seem to be in any way related to the literature under review here, if the cited article can be seen as exemplary for the current discourse in cybernetics.

58 See Stefan Heßbrüggen-Walter, "Die Angst vor dem 'Elektronengehirn': Topoi der Kybernetik-Kritik in der bundesdeutschen Nachkriegsphilosophie," in: *Konferenzabstracts DHd 2018*, ed. by Georg Vogeler, Köln: University of Cologne, 166–168, and Toni Bernhart, "'As a Hobby at First': Künstlerische Produktion als Modellierung," in: *Konferenzabstracts DHd 2020*, ed. by Christof Schöch, Paderborn: University of Paderborn, 2020, 77–80. See also Toni Bernhart, "Quantitative Literaturwissenschaft: Ein Fach mit langer Tradition?" in: *Quantitative Ansätze in Literatur- und Geistusdeswissenschaften: Systematische und historische Perspektiven*, ed. by Toni Bernhart [et al.], Berlin / Boston: De Gruyter, 2018, 207–220, online: <https://doi.org/10.1515/9783110523300-009>. In an Anglophone context, we might find articles that have a contemporary rather than a historical view on cybernetics, such as Alexander Galloway, "The Cybernetic Hypothesis," in: *differences: A Journal of Feminist Cultural Studies* 25/1 (2014) [special issue *In the Shadows of the Digital Humanities*, ed. by Elizabeth Weed and Ellen Rooney], 107–131, online: <https://doi.org/10.1215/10407391-2420021>. One might also encounter statements that centre current relevance: "Cybernetics [...] is supremely relevant in this age of digital humanities: indeed, it challenges us to think of both the digital and the human in a much broader way." (Leif Weatherby, "The Cybernetic Humanities," in: *Los Angeles Review of Books* (2 January 2017), online: <https://lareviewofbooks.org/article/the-cybernetic-humanities/> (accessed 8 February 2023).)

59 Cf. Roberto Busa, "Cybernetics and the Possibilities of a New Human Being," in: *One Origin of Digital Humanities: Fr Roberto Busa in His Own Words*, ed. by Julianne Nyhan and Marco Passarotti, Cham: Springer, 2019, 93–104 [originally published as "La Cibernetica e le possibilità dell'uomo nuovo," in: *Il Fuoco* 3 (1966), 19–33].

period. Norbert Wiener's thoughts on models in science are well-known and Wiener himself is referenced by McCarty in his most recent writings;[60] less well-known is the fact that cybernetics flourished in the GDR and USSR in the 1960s and 1970s and produced a wealth of literature on the topic.[61] In the case of the GDR, one might start by consulting Klaus Dieter Wüstneck's or Georg Klaus' writings on the matter.[62] Another

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60 For McCarty's elaborations on Wiener, cf. McCarty 2020, 210–212. Although Wiener is referenced, his modelling theory is not. Some brief information: Norbert Wiener was an American mathematician who is widely regarded as the founder of cybernetics. He differentiated between material and formal (or intellectual) models and, through his vision of cybernetics as a 'universal science', initiated the post-war dialogue on models and modelling in science together with Arturo Rosenblueth who was another pioneer in the field; cf. Arturo Rosenblueth and Norbert Wiener, "The Role of Models in Science," in: *Philosophy of Science* 12/4 (1945), 316–321. For this particular debate about modelling, see also Kline 2015, 44–55.

61 The history of the digital humanities in Russia has been contextualized in light of the tradition of cybernetics and its entanglement with mathematics and computer science; cf. Inna Kizhner [et al.], "The History and Context of the Digital Humanities in Russia," in: *Global Debates in the Digital Humanities* (Debates in the Digital Humanities; vol. 8), ed. by Domenico Fiormonte, Sukanta Chaudhuri and Paola Ricaurte, Minneapolis: University of Minnesota Press, 2022, 55–70, online: <https://doi.org/10.5749/9781452968919>. For a history of cybernetics in the USSR, see Slava Gerovitch, *From Newspeak to Cyberspeak: A History of Soviet Cybernetics*, Cambridge, Massachusetts / London: MIT Press, 2002. See also Egle Rindzeviciute, "Purification and Hybridisation of Soviet Cybernetics: The Politics of Scientific Governance in an Authoritarian Regime," in: *Archiv für Sozialgeschichte* 50 (2010), 289–310, and Benjamin Peters, "Normalizing Soviet Cybernetics," in: *Information & Culture* 47/2 (2012), 145–175. Yanina Prudenko has published a history of Soviet cybernetics and cybernetic art which is consciously described as part of a digital humanities tradition: "The Soviet Union had its own Digital Humanities." (Announcement by the publisher Garage, in which the title of the monograph is translated as *Cybernetics in Humanities and Arts in the USSR: Big Data Analysis and Computer Art*, see <https://garagemca.org/en/publishing/yanina-prudenko-cybernetics-in-humanities-and-arts-in-the-ussr-big-data-analysis-and-computer-art-by-yanina-prudenko> (accessed 8 February 2023).) For this publication, see Янина Пруденко, Кибернетика в гуманитарных искусствах и науках СССР, Москва́: Гараж, 2019 [Yanina Prudenko, *Cybernetics in Humanities and Arts in the USSR*, Moscow: Garage, 2019]. See also the discussion between Yanina Prudenko, Lev Manovich, Alexey Shulgin, Vladimir Velminsky, Vladimir Gubailovsky, Andrey Smirnov, and Nikolai Konstantinov about Soviet cybernetics in a digital humanities context, "Советские digital humanities и цифровое творчество," panel discussion (5 April 2019), online: <https://theoryandpractice.ru/videos/1426-kibernetika-stala-novoy-religiey-kak-razvivalis-digital-humanities-v-sssr> (transcription) and <https://www.youtube.com/watch?v=Af5G9MNBY3w> (video recording, both accessed 1 September 2023).

62 See Klaus Dieter Wüstneck, "Zur philosophischen Verallgemeinerung und Bestimmung des Modellbegriffs," in: *Deutsche Zeitschrift für Philosophie* 11/12 (1963),

example that still makes for very interesting reading today, not written by a cyberneticist but in the *Dunstkreis* ('orbit') of the discussion prompted by cyberneticists at the time, involving mathematicians and philosophers as well, is the 1966 monograph *Моделирование и философия* ('Modelling and Philosophy') by Victor Aleksandrovič Štoff, a professor of philosophy in Saint Petersburg (then Leningrad).[63] As for the connection of this work to cybernetics, we might cite what he states at the very beginning of his first chapter, namely that "in cybernetics, modelling is one of the main research methods"[64] and that it is "primarily through the achievements of cybernetics that the term model has spread among mathematicians and logicians, physicists and chemists, astronomers and biologists, economists and linguists and of course, first and foremost,

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1504–1532, and Klaus Dieter Wüstneck, "Einige Gesetzmäßigkeiten und Kategorien der wissenschaftlichen Modellmethode," in: *Deutsche Zeitschrift für Philosophie* 14/2 (1966), 1452–1463. He also published an article on models in the *Philosophisches Wörterbuch*, ed. by Georg Klaus and Manfred Buhr, Leipzig: Bibliographisches Institut, [6]1969, 729–734 [published in West Germany in three volumes as the *Marxistisch-Leninistisches Wörterbuch der Philosophie*, Hamburg: Rowohlt, 1972; I want to note that I have not been able to verify the page number via autopsy]. Georg Klaus, himself a philosopher, published extensively on cybernetics, which I mention to show how entwined these considerations were; see, for example, Georg Klaus, *Kybernetik und Erkenntnistheorie*, Berlin: Deutscher Verlag der Wissenschaften, 1966. For a contemporary West German view on Klaus and the flourishing of cybernetics in the East, see Friedrich Rapp, "Kybernetik und Erkenntnistheorie: Bemerkungen zur Konzeption von Georg Klaus," in: *Zeitschrift für allgemeine Wissenschaftstheorie / Journal for General Philosophy of Science* 5/2 (1974), 329–340, online: <https://www.jstor.org/stable/25170327>. See also Wolfgang G. Stock, "Georg Klaus über Kybernetik und Information: Studien zur philosophischen Vorgeschichte von Informatik und Informationswissenschaft in der Deutschen Demokratischen Republik," in: *Studies in Soviet Thought* 38/3 (1989), 203-236, online: <https://www.jstor.org/stable/20100467>.

63 Cf. Виктор Александрович Штофф, Моделирование и философия, Москва́ / Ленинград: Наука, 1966 [Victor Aleksandrovič Štoff, *Modelling and Philosophy*, Moscow / Leningrad: Science, 1966]. I have accessed the work through its (East) German translation, V. A. Štoff, *Modellierung und Philosophie*, transl. by Siegfried Wollgast, Berlin: Akademie-Verlag, 1969, and will subsequently be referring to this translation. The East German translation was commissioned by Hubert Laitko, a German philosopher and historian of science, and published in the GDR on his initiative. While only accessible to me as a second-hand purchase at the time of writing this book, De Gruyter has since published a reprint in 2022, online: <https://doi.org/10.1515/9783112645406>.

64 Štoff 1969, 17, original (German translation): "In der Kybernetik ist die Modellierung eine der hauptsächlichen Untersuchungsmethoden."

among cyberneticists themselves in the last decade."[65] While the monograph has to be read through a lens of source criticism,[66] it does illustrate the framework and milieu within which the discourse at the time operated.

Štoff himself was a philosopher of science and particularly interested in the epistemological role of models in science in general. To that end, he summarized the state of discussion and advanced his own classification of model types (see **FIG. 8**).[67] It should be noted that there are very few proposals for a comprehensive classification system of models in science. When compared to the distinction drawn between material and non-material models, which is also the distinction Arturo Rosenblueth and Norbert Wiener followed in their initiation of the post-war discourse about models in science,[68] Štoff's approach appears more sophisticated. His primary distinction is still that of material and non-material (or intellectual) models, but he divides each of them into three further categories: mathematically, physically, and spatially similar models on the one and symbolic, mixed (pictorial as well as symbolic), as well as pictorial (iconic) models on the other hand.[69]

What would a classification of models in the digital humanities look like? Would we dispense with the distinction between material and non-material models? One could imagine the use of material models in the digital humanities, but I am personally unaware of such a practice. The main distinction would, perhaps, lie between models that are visible, i.e. visualized, and those that are not. This obviously ties into their primary function and yet would seem to highlight a quality particular

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65 Ibid., original (German translation): "Vornehmlich durch die Erfolge der Kybernetik verbreitete sich im letzten Jahrzehnt der Terminus Modell unter Mathematikern und Logikern, Physikern und Chemikern, Astronomen und Biologen, Ökonomen und Sprachwissenschaftlern und natürlich in erster Linie unter den Kybernetikern selbst."
66 The circumstances of its creation are obvious, for example, in the emphasis on models being a *Widerspiegelung der Wirklichkeit* ('reflection of reality') in order to justify the study of the subject in the context of a philosophical dialectical materialism in the Marxist tradition, cf. Štoff 1969, 323–330. The observation that the entire *Abbild* discourse in these modelling theories is rooted in the epistemology of dialectical materialism is also the basis for Rapp's analysis of Klaus' writings, cf. Rapp 1974, 334f.
67 Cf. Štoff 1969, 48.
68 Cf. Rosenblueth / Wiener 1945, 317.
69 Cf. Štoff 1969, 48.

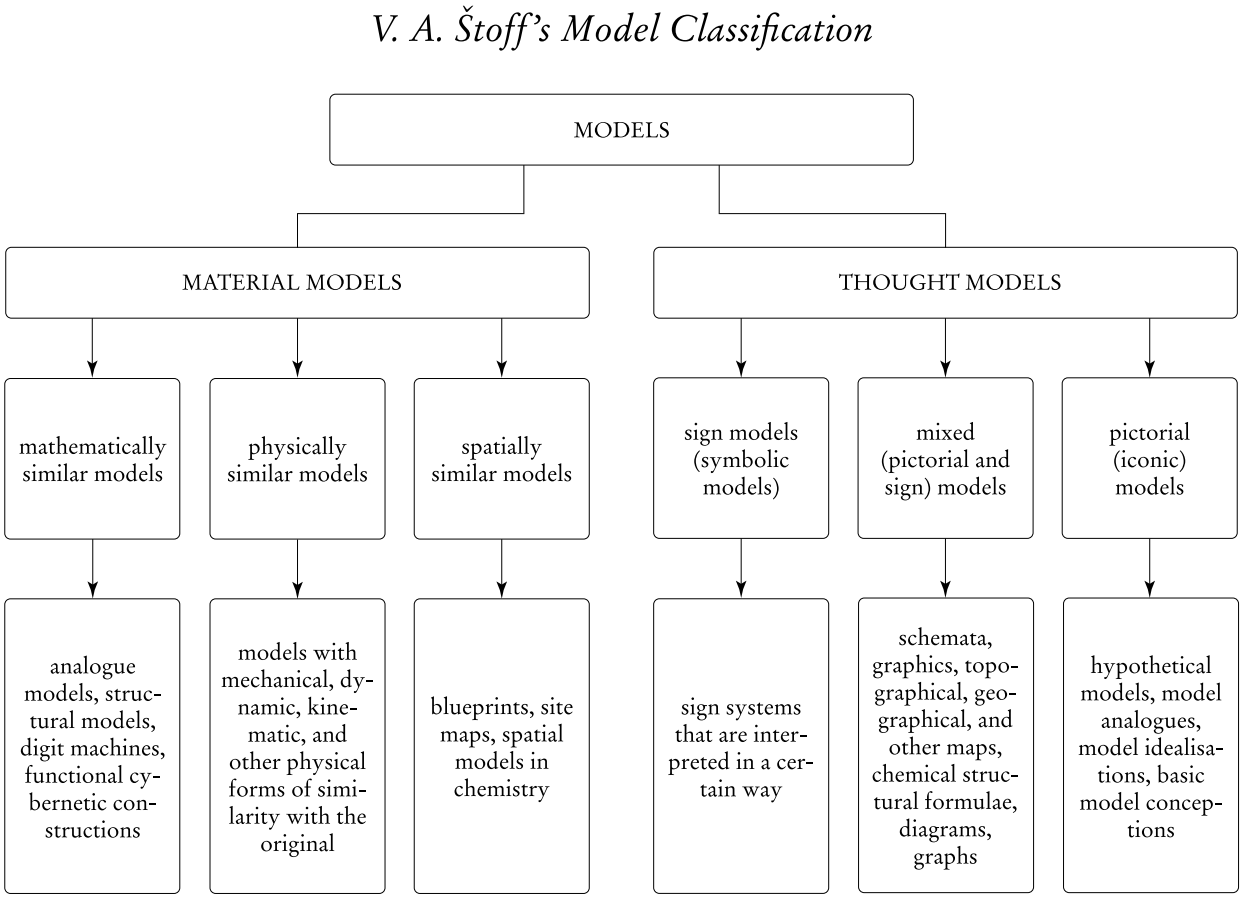


FIG. 8: V. A. Štoff's classification of scientific model types ("wissenschaftliche Erkenntnismodelle"), recreated in English here on the basis of its German translation; from V. A. Štoff, *Modellierung und Philosophie*, transl. by Siegfried Wollgast, Berlin: Akademie-Verlag, 1969, 48, online: <https://doi.org/10.1515/9783112645406>.

to this context. We might, in this instance, equate models in the digital humanities with models in computer science; and that might be a mistake. Until the question of models and modelling in the humanities has been clarified, it would not seem wise to make statements on the nature of models in the digital humanities, as far as our ability to classify them is concerned.

Another matter of interest – all of it is of interest, but within the confines of the present discussion – is Štoff's differentiation between a model and a theory which shall be reproduced here with the caveat that it is based on the German translation:

> So what is the difference between model and theory? The fundamental distinguishing feature between model and theory is not the degree of simplification (as I. T. Frolow supposes) nor the degree of abstraction nor, consequently, the number of realized abstractions but the way of expressing those abstractions and simplifications that is characteristic for the model. The content of a theory is expressed in a sum of assessments that are connected to each other through logical and specialized scientific rules and reflect the 'immediate' patterned, essential, and universal contexts and relations of reality. By contrast, in the model the same content is displayed in the form of typical situations, structures, schemata, a sum of idealized (i.e. simplified) objects etc., in which these patterned contexts and relations are realized or, which amounts to the same, in which the rules formulated in the theory are implemented but, so to speak, in 'pure form'. Because of this, a model is always a concrete construct that is, in a certain form or to a certain degree, illustrative, finite, and accessible for inspection or a practical activity.[70]

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70 Štoff 1969, 28, original (German translation): "Worin besteht also der Unterschied zwischen Modell und Theorie? Das wesentliche Unterscheidungsmerkmal zwischen Modell und Theorie ist nicht der Vereinfachungsgrad (wie I. T. Frolow annimmt), nicht der Abstraktionsgrad und folglich auch nicht die Menge der vollzogenen Abstraktionen, sondern die für das Modell charakteristische Ausdrucksweise dieser Abstraktionen und Vereinfachungen. Der Inhalt einer Theorie wird in einer Gesamtheit von Urteilen ausgedrückt, die untereinander durch logische und spezialwissenschaftliche Gesetze verbunden sind und ‚unmittelbar' gesetzmäßige, notwendige und allgemeine Zusammenhänge und Beziehungen der Wirklichkeit widerspiegeln. Im Modell wird der gleiche Inhalt dagegen in Form typischer Situationen, Strukturen, Schemata, Gesamtheiten idealisierter

With this pragmatic approach, Štoff achieves a synthesis of various aspects: He connects the oft-discussed model-qualities of simplification and abstraction with their narrowing of view on a given matter, while at the same time emphasizing that their form is their purpose, as it allows for a certain kind of study and a certain kind of subsequent action; in the context of science, that is, since he explicitly does not account for artistic models in his examination of 'model' definitions.[71] We can already sense, however, that the digital humanities also cannot be accounted for in this way: Neither have they proposed a definition of 'theory' that would allow for a differentiation with 'model' nor do they possess a theory of theory (or a theory about the relationship between theory and practice, the conceptual and the applied or implemented) in general.

Pragmatism leads us to another author who has been mentioned and should be discussed, even if briefly: Herbert Stachowiak, a German philosopher and cyberneticist whose modelling theory, influential in Germany to the present day,[72] has been neglected elsewhere,[73] compared

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(d.h. vereinfachter) Objekte usw. dargestellt, in denen diese gesetzmäßigen Zusammenhänge und Beziehungen realisiert oder, was dasselbe ist, die in der Theorie formulierten Gesetze erfüllt sind, aber sozusagen in ‚reiner Form'. Deshalb ist ein Modell immer ein konkretes Gebilde, das in einer bestimmten Form oder in einem bestimmten Grade anschaulich, endlich und der Betrachtung oder der praktischen Tätigkeit zugänglich ist."

71 Cf. Štoff 1969, 329. On the topic of (non-human) models in the context of art, one might, for example, beside Schelbert 2019 in the digital art history context, consult Horst Bredekamp, "Modelle der Kunst und der Evolution," in: *Modelle des Denkens: Streitgespräch in der Wissenschaftlichen Sitzung der Versammlung der Berlin-Brandenburgischen Akademie der Wissenschaften am 12. Dezember 2003* (BBAW-Debatte; vol. 2), ed. by Sonja Ginnow and Christiane Lahusen, Berlin: Berlin-Brandenburgische Akademie der Wissenschaften, 2005, 13–20, and Ludmilla Jordanova, "Material Models as Visual Culture," in: *Models: The Third Dimension of Science*, ed. by Soraya de Chadarevian and Nick Hopwood, Stanford: Stanford University Press, 2004, 443–451, as mentioned by Reinhard Wendler in his introduction of Mahr's *Replik* in Mahr 2015b.

72 For an appraisal, see Barbara E. Hof, "The Cybernetic "General Model Theory": Unifying Science or Epistemic Change?" in: *Perspectives on Science* 26/1 (2018), 76–96, online: <https://doi.org/10.1162/POSC_a_00268> [green open access version available under <https://doi.org/10.5167/uzh-150926>].

73 When there are references to Stachowiak in English-language literature on modelling, they are usually by Germans, such as in Bernhard Thalheim, "The Theory of Conceptual Models, the Theory of Conceptual Modelling and Foundations of Conceptual Modelling," in: *Handbook of Conceptual Modeling: Theory, Practice, and Research Challenges*, ed. by David W. Embley and Bernhard Thalheim, Berlin [et al.]: Springer, 2011, 543–577. That is, of course, to be expected since there are no English translations

to the body of output he produced on the topic, most importantly his *Allgemeine Modelltheorie* (1973).[74] Stachowiak was a proponent of 'neo-pragmatism'[75] and formulated a model theory centred around three features or characteristics of a model:

> (A) *Characteristic of mapping*. Models are always models of something, namely representations of certain 'originals' (or 'prototypes'), natural or artificial, which themselves can be models again. (B) *Characteristic of shortening* (reducing, abbreviation). Models do not generally map all the attributes of the original represented by them, but only those that are relevant for the modeller or model-user. [...] (C) *Characteristic of pragmatical model-function*. Models are not in themselves coordinated to their originals. They always fulfil their functions of substitution only for subjects with goal-dependent mental or factual operations within certain lapses of time.[76]

Here, we find abstraction and simplification supplemented by the pragmatic element of a *situatedness* of a model *usefulness* in its specific use in a specific context at a specific time. While this might seem obvious, explicitly stating it has the benefit of delimiting any universal *Geltungsanspruch* ('claim of applicability') either creators of models or their users might be inclined to entertain otherwise.

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of Stachowiak's main body of work. In another collected volume by Bernhard Thalheim, which is in German and notable for presenting the so-called *Kieler Modellbegriff* (model definition as developed by him and at his chair of computer science in Kiel), references to Stachowiak feature throughout, cf. Thalheim and Nissen eds. 2015. One of the few English-language publications of Stachowiak's work is Herbert Stachowiak, "Models," in: *Scientific Thought: Some Underlying Concepts, Methods and Procedures* (New Babylon; vol. 9), ed. by Unesco Division of Philosophy, Paris / The Hague: Mouton, 1972, 145–166, online: <https://unesdoc.unesco.org/ark:/48223/pf0000002251> (accessed 8 February 2023).

74 See Herbert Stachowiak, *Allgemeine Modelltheorie*, Wien [et al.]: Springer, 1973.

75 Cf. Stachowiak 1983 (viz. his section on "Erkenntnisstufen zum Systematischen Neopragmatismus und zur Allgemeinen Modelltheorie," 87–146).

76 Stachowiak 1972, 150.

Given the focus of our inquiry, it would appear sensible to end this section by summarizing the main findings as they pertain to the model-building that we will have to engage in (or anticipate engaging in):

(1) Models of most if not all kind would seem to share characteristics of abstraction, reduction or simplification, delineation, and, as McCarty would add as a differentiation between models and concepts, manipulability.[77]
(2) The difference between conceptual models and concepts as such is that conceptual models will have identified structures, i.e. elements and their relations, that can be clearly delineated and visualized.
(3) A model will never represent the entire 'original' (*Urbild* if we like, which can refer to a concept or otherwise ideational 'entity' or 'system of entities' as well as to a material or pictorial 'entity' or 'system of entities' as well as to other types of 'entities' and other models)[78] but we can purposefully choose those parts of the *Urbild* that are *useful* for a certain intent of study or activity.

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77 Cf. McCarty 2005, 26. This differentiation seems self-explanatory at first glance; however, it also begs a similar question as the issue of simulation in a humanities context, namely for which fields of study the manipulability of models would be a benefit in their methodological repertoire and for which it would, conversely, be in contradiction to their established scholarly ethics and *Erkenntnisstrategien* ('strategies for gaining insight'); and on that point it would, furthermore, beg the questions how exactly this would manifest and what could be done to countenance the 'manipulation' of elements in a model; whether there would have to be criteria according to which this is admissible in certain circumstances of correction or uncertainty or exploration ('what happens if...' would take it closer to issues of simulation, however, and with that closer to the issues discussed in this chapter before, which goes to show that each discipline would have to contend with these questions on their own and within the boundaries of their remit of scholarly argumentation). A model that maps (in the sense of *abbilden*) a state of knowledge about a body of evidence could be manipulated in contradiction to that evidence but then it would not represent that evidence or a state of knowledge about that evidence anymore; conversely, a single model could, through manipulation, represent different concurrent states of knowledges about (i.e. interpretations of) a body of evidence that would exist concurrently within scholarship with or without models and model manipulation. In any case, it would seem that there are still many debates to be had about this particular aspect of modelling.

78 I generally hesitate to use the term 'system' because that might necessitate a discussion of Niklas Luhmann or other system theorists, especially since mistranslations

(4) All models are both models-of and models-for, that is, *abbildend* and *vorbildend*, to some degree, but we can differentiate models along their *primary* function in this regard.

(5) In humanities computing, conceptual models that are universal more than they are case-specific, which is not to say that they are universal, will tend towards being *vorbildend*, in the sense that they purposefully await further implementation and specification in the form of another model, e.g. in the form of a case-specific data model.

(6) Consequently, in the context of this book, it would seem to be the case that we are developing a conceptual *vorbildendes* model *for* digital scholarly editions so that others may develop an editorial *abbildendes* model *of* certain specific materials; and since there is no methodical guideline for this, the following chapters, or at least those examining a variety of source materials, will focus on uncovering principles, identifying structures, and delineating terms of involved scholarship.

As a second to last point in this general part of the discussion, it should be noted that McCarty compares the term 'model' to related terms and concepts, namely analogy, representation, diagram, map, simulation, and experiment.[79] Even though this differentiation might, at first, seem complex, the discussion may be abbreviated in the following way: models are analogical but there are other types of analogies; models are representations but there are other types of representations; models are often depicted in the form of diagrams but the visualization of a model is not the same as the model since one model can be depicted in different diagrams – and a model can be represented in forms other than a diagram, such as in a physical three-dimensional model; maps are certain types of models

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between German and English have already caused much confusion among scholars in that regard, cf. Ervin Laszlo, "Foreword," in: Ludwig von Bertalanffy, *Perspectives on General System Theory: Scientific-Philosophical Studies*, ed. by Edgar Taschdjian, New York: George Braziller, 1975, 8–13. It is interesting, however, to note the intersection of the pioneering work of biologist Bertalanffy with that of cybernetic pioneers like Norbert Wiener.

79 Cf. McCarty 2005, 28–37.

but not every model is a map, although we might refer to the process of *abbilden* as mapping; models can be used for simulations when dynamic factors like time are added to the equation and elements are manipulated in their positioning and relationality; models can be experimental in the sense that they might be used for testing and visualizing a hypothesis that might be revealed to be flawed in the process of trying to model it – but there are other types of experiments that are more likely to satisfy standards applied to the procedures involved in an experiment, especially in the natural sciences, where an experiment will aim to uncover that which is unknown whereas a model, as noted before, may be an explorative inquiry into a subject matter and may uncover in its process something previously unknown but may not, however, depict that which is unknown unless the depiction of the known is treated as simultaneously being a depiction of that which is unknown (although a model will never depict everything that is already known and will therefore, through an absence of something in the model, not inevitably denote the absent as unknown).

As for the last point of this general part, let me emphasize that it stands to reason that while there are many more authors in many more languages and contexts that should be of interest to the modelling discourse in the digital humanities, the purpose of this section was merely to draw attention to that very fact and suggest venues for exploration. More work is to be done to recover directly relevant writings where they might help advance current positions in the sense that some of those contributions are several decades old and yet would seem to be ahead of current positions; progress can be made in ignorance of such literature, but one supposes that it can be made more so in knowledge of it. To that end, the digital humanities should seek to be aware of discourses at the edges of their disciplinary purview, which is to say, they should be aware of the discourses *touching* the purview of humanities computing, present and past, such as in the case of cybernetics as it fuelled discussions of modelling theory in the 1960s and 1970s.

D.
MODELS IN THE HUMANITIES

If it now seems as if this chapter has already served its purpose, that impression is deceptive. Moving from the general discussion of models in science to a slightly more specific discussion of models in the humanities serves to make a point about an epistemological core characteristic of the humanities that may complicate modelling concerns in the digital humanities and furthermore highlight why scholarly editing may be one of the few humanistic activities that already translate well and will presumably continue to translate well into a computational paradigm. Once we have established that, we can turn to digital scholarly editing and aspects specific to the modelling *environment* that we operate in and the modelling *parameters* that we might want to keep in mind when developing models for digital scholarly editions.

To start with, let us register another desideratum: Models in the humanities and modelling as a method in the humanities have hitherto not been particularly pronounced subjects of study; neither in the humanities as such nor in discussions of humanities computing – at least not with a broad view on models in the *humanities* rather than a view on models in specialized fields of humanistic study. While discussions of models in science can fill sizeable rows on bookshelves, as demonstrated in the previous sections, models in the humanities are usually not kept in mind, let alone addressed specifically.[80] This means that in the case of humanities computing, humanists and other researchers (such as computer scientists) alike are confronted with two issues of modelling: how to model something in the humanities at all and how to model something from the humanities computationally. These issues should not be confused but a lack of literature and consideration on the first

80 This is not an issue exclusive to the English language. Even though German publications on general matters of *Wissenschaftstheorie* would ostensibly seem to encompass the humanities, in practice this is often not the case, cf. Athena Panteos and Tim Rojek, "Einleitung," in: *Texte zur Theorie der Geisteswissenschaften*, ed. by Athena Panteos and Tim Rojek, Stuttgart: Reclam, 2016, 9–23, here esp. 11–12.

point necessarily leads to a conflation. The solution, at present, would therefore seem to be a consideration of models in the humanities as such.

All of the above is not to say that there have been no references to 'models' and 'modelling' *in* the humanities; quite the opposite. As Manfred Thaller has pointed out, the historian Geoffrey Rudolph Elton opposed the use of quantitative methods in historical studies (as well as other kinds of methods 'borrowed' from other disciplines) and yet nonetheless did not object to the term or concept of a 'model' itself, rather treating it as naturally belonging to the vocabulary of a historian.[81] Searching the literature produced in historical studies would likely unearth a multitude of uses of the term 'model' but little discussion *of* the term 'model'. In one of the few publications explicitly about models in historical studies, "Models Inherent in History" (1972), historian and hermeneuticist Gordon Leff described the resistance to a discourse about modelling in the following way:

> Historians as a profession are not given to constructing or employing models in any formal or explicit sense; where they do, it is mainly in areas bordering on other disciplines, especially economics and social studies. Most historians, if asked, would probably deny that models had anything to do with their subject. In that they would, I believe, be mistaken.[82]

He accurately identifies that the issue is not whether models and modelling play a role in scholarship but whether this is acknowledged and discussed. When asked what they would consider to be a model

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81 Cf. Manfred Thaller, "Von der Mißverständlichkeit des Selbstverständlichen: Beobachtungen zur Diskussion über die Nützlichkeit formaler Verfahren in der Geschichtswissenschaft," in: *Historical Social Research* suppl. 29 (2017), 221–242, here 228, online: <https://doi.org/10.12759/hsr.suppl.29.2017.221-242> [originally published in *Frühe Neuzeit – Frühe Moderne: Forschungen zur Vielschichtigkeit von Übergangsprozessen* (Veröffentlichungen des MPI zur Erforschung multireligiöser und multiethnischer Gesellschaften; vol. 104), ed. by Rudolf Vierhaus [et al.], Göttingen: Vandenhoeck & Ruprecht, 1992, 443–67].

82 Gordon Leff, "Models Inherent in History," in: *The Rules of the Game: Cross-Disciplinary Essays on Models in Scholarly Thought*, ed. by Teodor Shanin, London / New York: Routledge, 2001, 148–160, here 148 [reprint; originally published in Abingdon, Oxfordshire: Tavistock Publications, 1972].

in historiography, a colleague of mine answered: feudalism. But is feudalism not rather a concept which may be expressed in different models and at different stages of idealization, unless one were to equate 'feudalism' with a most schematic and abstract view on hierarchical socio-economic order? Such an extreme simplification would seem ill-suited for historical studies in an academic context.

We do, of course, find simplifications of the kind that is often adhered to even when there is criticism over its lack of nuance. Periodization is one such example and it is also one that Leff cites by referring to the "conception of an epoch."[83] Periodization, that is, the division of time into eras and epochs and ages, clustered around a purported unity of thought, societal, political, economic, or other factors, might be a useful "organizing principle"[84] for the study of history, but it might also suggest continuities and discontinuities where there are none, or at least not on the scale suggested, and it might also serve to lock assumptions, presuppositions, or even prejudices into place by virtue of association.[85] The reference to early medieval times as the 'dark ages' that one can sometimes still encounter in Anglophone literature on the topic, albeit nowadays supposedly referring to a lack of source material[86] rather than the pejorative meaning intended by the Humanist scholars who originated the notion,[87] is a good example for this.[88] Even the source material

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83 Ibid., 150.

84 Leff 1972/2001, 151.

85 On the topic of the periodization of history, see Lawrence Besserman (Ed.), *The Challenge of Periodization: Old Paradigms and New Perspectives*, London / New York: Routledge, 2013 [originally published in New York: Garland, 1996], and Johan Hendrik Jacob van der Pot, *Sinndeutung und Periodisierung der Geschichte: Eine systematische Übersicht der Theorien und Auffassungen*, Leiden [et al.]: Brill, 1999. To reiterate: If we consider discussions of periodization to be discussions about modelling in the humanities, then there have been many such discussions; but we will not find them under that banner.

86 This type of argumentation is usually connected to the so-called 'migration period' in British history and exemplified by the following: "In this migratory period things were rather less settled than in Roman times, and disruption made for only patchy source survival. It is indeed the Dark Age before around 800." (Helen M. Jewell, *Women in Dark Age and Early Medieval Europe c. 500–1200*, Basingstoke: Palgrave Macmillan, 2006, 2.)

87 Cf. Theodor E. Mommsen, "Petrarch's Conception of the 'Dark Ages'," in: *Speculum* 17/2 (1942), 226–242.

88 See on this topic as such and on the question why the term 'dark ages' has survived in the vocabulary of British historians (applied to the so-called 'Anglo-Saxon' period)

argument begs the question why such a term would not be applied to other, less well-documented times with greater frequency and where the line is drawn between 'dark ages' and suitably well-documented 'lighter' or, indeed, 'enlightened ages'. It is perhaps no coincidence that publications such as *The Bright Ages: A New History of Medieval Europe* (2021) have been embroiled in controversies of their own, cut from the same narrative cloth as the one they seek to shed.[89]

After discussing the issue of periodization, Leff goes on to argue that the study of history might be evidence-based but only "seemingly empirical"[90] in that its results are not reproducible and the researcher dependent on sources that survived arbitrarily or already in service of a narrative. Consequently, the study of history relies heavily on structured concepts within which the evidence can be framed, partitioned, and related to each other; in other words, models:

> History cannot be systematically studied or written unless the historian observes the criteria which are peculiar to it as a body of knowledge. For that a conceptual framework is necessary, which, however empirically founded, becomes intelligible only through following the same intellectual processes of definition and inference necessary to all conceptual knowledge. That framework is provided by the historian's models, which, as mental constructs imposed upon the evidence, make the facts speak in response to his prompting and not of themselves.[91]

We could find many examples for this but the most obvious might be the French *Annales* school: What is Fernand Braudel's methodical instrument of dividing history into *longue durée*, *moyenne durée*, and

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longer than elsewhere Janet L. Nelson, "The Dark Ages," in: *History Workshop Journal* 63/1 (2007), 191–201, online: <https://doi.org/10.1093/hwj/dbm006>.

89 See for the book in question Matthew Gabriele and David M. Perry, *The Bright Ages: A New History of Medieval Europe*, New York: HarperCollins, 2021. On the controversy that followed the release of the book, see Jennifer Schuessler, "Medieval Scholars Spar on a Modern Battlefield: Twitter," in: *New York Times* (6 May 2022), online: <https://www.nytimes.com/2022/05/06/arts/medieval-race-twitter.html> (accessed 9 February 2023).

90 Leff 1972/2001, 148.

91 Ibid., 149.

événement if not a model, a structural lens through which to study segmented stretches of time?[92] Lest we forget, he even published a monograph by the title *Le Modèle italien* (1989).[93]

Models occur and recur in other disciplines of the humanities as well, of course. Arnold Schönberg's definition of a *Satz* has been referred to as a 'model'[94] and there is a more general understanding of a *Satzmodell* in musicology (in this case denoting a general configuration or formula or schemata of musical elements characteristic for a certain composer or epoch)[95] which is quite obviously related to issues discussed here, not least of all because German researchers, in writing about this specific concept, have explicitly drawn on the model theory of Stachowiak.[96] As for philology, Lachmann's stemmatology has been mentioned before but belongs here as well since it is a prime example for modelling;[97] for literary studies, we could also cite Moretti – his monograph *Graphs, Maps, Trees* (2005) has the subtitle *Abstract Models for a Literary History* after all. We could refer to Max Weber's notion of an *Idealtypus* as an

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92 Cf. Fernand Braudel, "Histoire et Sciences sociales: La longue durée," in: *Annales: Économies, Sociétés, Civilisations* 13/4 (1958), 725–753.

93 See Fernand Braudel, *Le Modèle italien*, Paris: Arthaud, 1989.

94 For a discussion of 'model' and 'variant' in this context, see Oliver Schwab-Felisch, "Haydn, Schenker, Schönberg: Ein Beitrag zur Eklektizismusdebatte in der Musiktheorie," in: *Zeitschrift der Gesellschaft für Musiktheorie* 7 [special issue] (2010), 165–196, online: <https://doi.org/10.31751/568>. For Schönberg's writings, see Arnold Schönberg, *Fundamentals of Musical Composition*, ed. by Gerald Strang in collaboration with Leonard Stein, London: Faber, 1967. On the topic of 'modelling' in musicology which, as an *activity*, is usually used to refer to an act of musical imitation, see J. Peter Burkholder, 'Modelling,' in: *Grove Music Online* (2001), online: <https://doi.org/10.1093/gmo/9781561592630.article.53082> [published in print 20 January 2001, published online 2001].

95 It should be noted that the entire notion of a *Satz* and the notion of *Formenlehre* in general is not without its critics in musicology and would seem to be applied in a fairly broad way in the literature about this particular understanding of *Satzmodell*, as cited in the following fn. For an impression of the discussion about the *Formenlehre* and the issue of speaking of 'schemata', cf. Clemens Kühn, *Formenlehre der Musik*, Kassel [et al.]: Bärenreiter, 1987, 7–12.

96 Cf. Oliver Schwab-Felisch, "Umriss eines allgemeinen Begriffs des musikalischen Satzmodells," in: *Zeitschrift der Gesellschaft für Musiktheorie* 4/3 (2007), 291–304, online: <https://doi.org/10.31751/262>, and Ulrich Kaiser, "Vom Satzmodell zum Modell," in: *Zeitschrift der Gesellschaft für Musiktheorie* special issue 13 (2016), 135–153, online: <https://doi.org/10.31751/865>.

97 See Roelli ed. 2020.

attempt to model abstracted aspects of social reality[98] or Erwin Panofsky's iconographic method.[99]

Rens Bod – a proponent of the study of a 'history of the humanities'[100] – would seem to agree with these examples, given that he lists very similar ones, saying that

> [s]uch [modelling] practices are found not only in linguistics (e.g. De Saussure, Jakobson) but also in philology (Lachmann, Greg), musicology (Schenker, Lerdahl), literary theory (Propp, Todorov), art history (Wölfflin, Panofsky) and historiography (the *Annales* school), just to name a few.[101]

His article on 'modelling in the humanities' from 2018, which the quote is taken from and which, to date, may be the only one to address the topic of modelling in the humanities under that very same title, applies his argument about the history of the humanities as developed by him earlier[102] to models *ex post facto*: namely that the humanities are, at their core, about 'linking patterns to principles' and that that, when considered in the light of modelling, means that they are about modelling (or that modelling is about 'linking patterns to principles' by the same token).[103]

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98 See Max Weber, "Die ‚Objektivität' sozialwissenschaftlicher und sozialpolitischer Erkenntnis," in: *Archiv für Sozialwissenschaft und Sozialpolitik* 19/1 (1904), 22–87.

99 See Erwin Panofsky, "Iconography and Iconology: An Introduction to the Study of Renaissance Art," in: *Meaning in the Visual Arts: Papers in and on Art History by Erwin Panofsky*, New York: Doubleday Anchor Books, 1955, 26–54 [originally published as "Introductory," in: *Studies in Iconology: Humanistic Themes in the Art of the Renaissance*, New York: Oxford University Press, 1939, 3–31].

100 He is, for example, one of the founders of the journal *History of Humanities* (2016–) and author of the book *A New History of the Humanities* (2013). For the editorial of the first issue of the journal, see Rens Bod [et al.], "A New Field: History of Humanities," in: *History of Humanities* 1/1 (2016), 1–8, online: <https://doi.org/10.1086/685056>; for the monograph, see Bod 2013a.

101 Rens Bod, "Modelling in the Humanities: Linking Patterns to Principles," in: *Historical Social Research* suppl. 31 (2018), 78–95, here 85, online: <https://doi.org/10.12759/hsr.suppl.31.2018.78-95>.

102 Most prominently in Bod 2013a.

103 Cf. Bod 2018, *passim*. In Bod 2013a, we find discussion of the thesis but not in relation to models and modelling which I only point out to underline that his central thesis is not *a priori* wedded to the discourse about modelling. He does use the term throughout as one might and earlier publications of his show that the notion of creating a model has played a role in his own formulation of theories in and *about* science and

While this theory holds some weight, it is not without issues. Consider the simple fact that I arrived at some of the same examples for modelling in the humanities as he did: Would that not indicate that while modelling is a part of the humanities, it is, in fact, if viewed from a very particular perspective of pronounced and fairly explicit modelling, not as ubiquitous as one might assume and can be associated with and pinpointed to a select number of scholars representing certain structural or structuralist approaches within their respective disciplines without being actually representative of a *predominant* or in some cases even particularly widespread approach in any of them? It might be possible to develop a broad understanding of modelling in the humanities more akin to the ideas by Gordon Leff but equating modelling with a 'linking of patterns to principles' is reminiscent of Wilhelm Windelband's 19th century distinction between *idiographic* and *nomothetic* studies; ironically, perhaps, given that Bod takes a dim view of Windelband's approach.[104] He argues against Windelband's characterization of the humanities as being invested in "the singular and the unique"[105] (with the natural sciences said to be invested in uncovering laws)[106] by claiming that this was a matter of the humanities creating an identity for themselves, not a lived reality throughout most of their history.[107] Bod essentially reverses the idea, not

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the humanities; see, for example, Rens Bod, "Towards a General Model of Applying Science," in: *International Studies in the Philosophy of Science* 20/1 (2006), 5–25, online: <https://doi.org/10.1080/02698590600640950>, and Rens Bod, "A Unified Model of Structural Organization in Language and Music," in: *Journal of Artificial Intelligence Research* 17 (2002), 289–308, online: <https://doi.org/10.1613/jair.1076>.

104 Cf. Bod 2018, 85. For Windelband's programmatic text, see Wilhelm Windelband, *Geschichte und Naturwissenschaft*, Straßburg: J. H. Ed. Heitz, ³1904, online: <https://archive.org/details/geschichteundnat01wind> [printed version of his inauguration speech as rector of the University of Strasbourg in 1894]. For a translation of this speech, see Wilhelm Windelband, "Rectorial Address, Strasbourg, 1894," transl. by Guy Oakes, in: *History and Thought* 19/2 (1980), 169–185 [for an introduction by the translator, see Guy Oakes, "History and Natural Science," in the same issue, 165–168].

105 Windelband 1894/1980, 182.

106 Cf. "From this perspective, however, the distance between psychology and chemistry is hardly greater than the distance between mechanics and biology. [...] Although the phenomenon in question may be a motion of bodies, a transformation of matter, a development of organic life, or a process of imagination, emotion, and volition, the purpose of these disciplines is invariably the discovery of laws of phenomena." (Ibid., 174.)

107 Cf. "This vision turned out to be extremely influential as it gave the humanities a powerful identity [...]. This constitutive separation between the humanities and sciences,

in order to divide the humanities and the sciences but to unite them. By exclusively focusing on examples of stemmatology and the like, on the alleged search for *patterns* as the primary investigative role, he creates the impression that there are no examples for modelling in the humanities besides and indeed, he even states that "[w]hen Dilthey's and Windelband's visions were gaining ground – from the early twentieth century onwards – modelling practices in the humanities continued,"[108] making it seem as if they continued *in spite of* the fundamental elaborations on the nature of the humanities by figures like Windelband and Wilhelm Dilthey whom we will have to discuss in a moment's time – or, indeed, by a figure like Benedetto Croce whose writings are disposed of by Bod in conjunction with Windelband and Dilthey in one swift mention.[109] If we instead took Windelband's theory seriously on its own merits, we would find that he, in fact, makes a much greater case for modelling being a core activity in historical studies and by extension the humanities than Bod himself. For Windelband states:

> Natural science seeks laws; history seeks *structural forms*. In the natural sciences, thought moves from the confirmation of particulars to the comprehension of general relationships; in the historical sciences, it is devoted to the faithful *delineation* of the particulars.[110]

By speaking of *patterns* and continuing to speak of *patterns* after entering his thesis about the humanities into the modelling debate, Bod potentially overlooks the more fitting term: Even when the humanities are concerned with the singular, unique, and particular, they are concerned with *conceptualizing* it and *delineating* its parts and *relating* them to each other and there consequently need not be any *pattern* involved, only a

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however, did not correspond to actual practice in the humanities before the nineteenth century." (Bod 2018, 85.)

108 Bod 2018, 85.

109 Cf. "The fact that their [Windelband's and Dilthey's] work nonetheless appeared to represent the accepted view of the humanities is largely because, together with the work of Croce, at the beginning of the twentieth century it was virtually the only philosophical reflection concerning the humanities." (Bod 2013a, 260.)

110 Windelband 1894/1980, 178. Emphasis by myself.

structure, which may sound similar but is not the same since it need not involve any *recurrence* of elements or the search thereafter. The relationship between the singular and the general is much more complicated than that, of course, once we begin asking how something may be identified as unique – is it because it occurs within a framework of similarity, from which it deviates? The humanities are, at their heart, a comparative project. This also explains the need for scholarly editions. Variance cannot be understood without a sense of unity, unity cannot be distinguished without a sense of originality. Insofar as the search for patterns allows for the unexpected within the expected (and notions of similarity and dissimilarity are entirely more complicated still in the historical sciences), one might say that it forms part of the investigative toolkit that the humanities have at their disposal. If the humanities, however, primarily seek to delineate objects of study, thoughts, terms, events, expressions in art, and so on, in order to *name* and *understand* them in relation to each other (i.e. in order to find a language that makes sense of the evidence and that which it bears witness to), then the humanities are not primarily concerned with linking patterns to principles, unless one confuses patterns with structures, viz. delineations, and principles with meaning, viz. a communal meaningfulness. Framing the history of the humanities from antiquity to modernity under certain conceptual premises to order it into a sense-making narrative is, I might add as a side note, an exercise in modelling in itself and runs the risk of establishing links between very different practices of scholarship across very different times, countries, and cultures, all of which we might not want to subsume under a very generalized 'humanities' umbrella denoting not only what modern-day humanities may be said to encompass but a specific tradition of scientific inquiry – insofar as there even is such a tradition – that found continuation both in the sciences if deemed separate from the humanities and in the humanities if deemed part of the sciences, which we would account for by describing the 'linking of patterns to principles' as one of many objectives in the *Wissenschaften* as such.

Criticism of Rens Bod's position has been unusually sharp (prior to entering the modelling discourse, in the context of which I am not aware of a response). Joris van Zundert has drawn attention to a sociological aspect of this debate:

> In his recent history of the humanities, Rens Bod dedicates a mere two pages to the concept and history of hermeneutics, in a section titled "Hermeneutics and the anticipatory 'method'" (Bod, 2013:333–4). He disposes of the "method" as being based on guesswork and premonitions. This dismissal might be cast aside as anecdotal were it not for Bod's position as professor of computational and digital humanities, investigating the humanities from both a computational and a historical perspective.[111]

Andreas Fickers, arguably one of Bod's main detractors, has even gone so far as to state the following:

> Driven by a utilitarian logic and motivated by the ambition to create visibility in the 'economy of attention', Bod's provocative statements of 'the end of humanities 1.0' can be interpreted as a perfect embodiment of a specific state of mind within contemporary academia. A mindset that the Austrian Professor of Digital Methods in Architecture and Space Planning Georg Franck has aptly dubbed 'mental capitalism'.[112]

The tone of the debate (in phrases such as "[i]n paraphrasing Dilthey one could say that the veins of the 'reasoning subject' Rens Bod seem to be filled not with real blood, but with 'the diluted sap of rationality'"[113]) is startling in its severity. One of the primary points of contention or causes for offence would seem to be Bod's disregard for Dilthey and the hermeneutical project. Let us turn to Dilthey then and consider why his notion of the humanities might still be of relevance as well as what a

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111 Joris van Zundert, "Screwmeneutics and Hermenumericals: The Computationality of Hermeneutics," in: *A New Companion to Digital Humanities*, ed. by Susan Schreibman, Ray Siemens and John Unsworth, Hoboken: Wiley-Blackwell, 2016, 331–347, here 340f.

112 Andreas Fickers, "Veins filled with the Diluted Sap of Rationality: A Critical Reply to Rens Bod," in: *Low Countries Historical Review* 128/4 (2013), 155–163, here 156, online: <https://doi.org/10.18352/bmgn-lchr.9347>. Bod's response in return can be found in Rens Bod, "Who's Afraid of Patterns? The Particular versus the Universal and the Meaning of Humanities 3.0," in: *Low Countries Historical Review* 128/4 (2013), 171–180, online: <https://doi.org/10.18352/bmgn-lchr.9351> [hereafter Bod 2013b].

113 Fickers 2013, 160.

'model of model-being' – to speak with Bernd Mahr[114] – might have to take into account when it comes to the humanities and their capacity for gaining *Erkenntnis* ('insight'). This is going to be important for understanding what type of knowledge we can or cannot model.

E.
EMPATHY AND EVIDENCE

To state it outright: An element that we might have to be aware of is the element of *Einfühlung* ('feeling-into') or *Nachfühlung* ('re-feeling') which we might also call *empathy* although that term is misleading in English. Mentioning this can provoke a certain hostile response, evidenced by the criticism Dilthey was subjected to by Jürgen Habermas and Hans-Georg Gadamer,[115] but as we will see, this notion is far from arbitrary or sentimental.

First of all, what is meant here by *Einfühlung* is the cognitive ability of perspective-taking.[116] In that, it is not a notion unique to any particular theorist, let alone any particular German theorist. We might, for example, reach back to neo-Confucian scholar Zhu Xi (1130–1200) and his distinction between 'self-focused' and 'other-focused' empathy[117] or,

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114 Cf. the title of Mahr 2008.

115 Their superficial reading of Dilthey has in turn been criticized; cf. Austin Harrington, "Dilthey, Empathy and Verstehen: A Contemporary Reappraisal," in: *European Journal of Social Theory* 4/3 (2001), 311–329, here 312f., online: <https://doi.org/10.1177/13684310122225145>.

116 On this topic in general, see Karsten Stueber, *Rediscovering Empathy: Agency, Folk Psychology, and the Human Sciences*, Cambridge, Massachusetts / London: MIT Press, 2010 [paperback; hardcover published in 2006]. In this context, one could also discuss the somewhat related neuroscientific concept of a 'theory of mind', on the topic of which see Alvin I. Goldman, "Theory of Mind," in: *The Oxford Handbook of Philosophy of Cognitive Science*, ed. by Eric Margolis, Richard Samuels and Stephen P. Stich, Oxford [et al.]: Oxford University Press, 2012, 402–424, and Christopher D. Frith and Daniel M. Wolpert (Eds.), *The Neuroscience of Social Interaction: Decoding, Imitating, and Influencing the Actions of Others*, Oxford [et al.]: Oxford University Press, 2004.

117 See Justin Tiwald, "Zhu Xi on Self-Focused vs. Other-Focused Empathy," in: *Dao Companion to Zhu Xi's Philosophy*, ed. by Kai-Chiu Ng and Yong Huang, Dordrecht: Springer, 2020, 963–980. The difference here is the difference between reconstructing another person's perspective versus how oneself would feel if put in that position. On

for more recent times and with more regard for the role that the concept plays in scholarship, refer to the writings of French historians of the Romantic era[118] such as Augustin Thierry (1795–1856) or Jules Michelet (1789–1874) who held that empathy was a crucial tool for a historian; it has even been stated that "[e]mpathy was the great Romantic trick; Michelet turned it into a scholarly method."[119] That scholarly method was marked by an identification of the scholar with the subject they were writing about, meaning that the historian was supposed to inhabit the emotional landscape of its subject and actually "become, through a kind of imaginative empathy or compassion, the historical object and actor in the event."[120] In this kind of *sympathy*, this kind of "history as 'resurrection'"[121] Michelet's concept differed from the sense of the term we will be working towards. But it already indicates, *pace* Bod, that there are many different conceptions of humanistic scholarship, other than a desire to 'link patterns to principles', and that they cannot be relegated to the fringes when they were at the very heart of the humanities as they formed and re-formed in the 19th century, if we restrict ourselves to the most recent European intellectual history.[122] This is also expressed in Hayden White's characterization of Michelet:

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the topic of empathy in Confucianism, one could also reach back much further, such as to classic philosopher Mèng kē / Mencius (c. 370–290 BC) who "singled out sympathy-and-empathy ('the heart that cannot bear the suffering of others') as the unique and defining characteristic of our nature" (Tu Wei-Ming, *Centrality and Commonality: An Essay on Confucian Religiousness*, Albany: State University of New York Press, 1989, 118).

118 To recall the discussion of periodization: This use of a marker demonstrates why they are seen as useful, conveying a multitude of associations by proxy.

119 Eugen Weber, "Great Man at Work: Michelet Reconsidered," in: *The American Scholar* 60/1 (1991), 53–72, here 58.

120 Michèle Hannoosh, *Jules Michelet: Writing Art and History in Nineteenth-Century France*, University Park: Pennsylvania State University Press, 2019, 30. On Michelet, as far as Anglophone literature goes, one might, besides Hannoosh 2019, also read what Hayden White has written about him, cf. Hayden White, *Metahistory: The Historical Imagination in Nineteenth-Century Europe*, Baltimore: John Hopkins University Press, 2014, 135–162 [fortieth-anniversary edition; originally published in 1973] – and one might, for example, take note of the fact that Michelet himself "specifically denied that he was a Romantic" (ibid., 149).

121 White 2014, 152.

122 It should be noted that Bod's global thinking is a welcome aspect of his work and impressive in the breadth of time and space that it covers in his history of the humanities;

> Unlike Herder, who conceived history as a *gradual* transformation of humanity from one unique set of particulars to another, Michelet conceived it as a series of cataclysmic reversals caused by long-growing tensions which force humanity into *opposed* camps.[123]

Neither of those approaches would be adequately described by a 'search for patterns' although, one supposes, *pattern* is a flexible enough term to allow for an embrace of all kinds of relational observations, albeit losing its specificity in the process.[124]

Returning to the matter of *Einfühlung* and a German context, it should be remembered that the discourse about it was widespread in the 19th century across many different disciplines – be it art historian Robert Vischer, psychologist Theodor Lipps, or, indeed, art historian Heinrich Wölfflin, they were all drawn to the term, for reasons of aesthetics and psychology, among others.[125] It was not only the appeal of

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with the caveat that this is used to argue a globality and universality of a shared human project (the linking of patterns to principles) that re-inscribes different traditions into a narrative that is not overly concerned with their, one might be tempted to say, particularities.

123 White 2014, 155.

124 Bod's approach is based on a broad definition: "My concept of 'patterns' is in fact an umbrella that covers everything that can be found between inexact regularities and exact laws." (Bod 2013a, 9.) Similarly: "The notion of 'pattern' is thus an umbrella term that covers everything that can be found between inexact trends and exact laws." (Bod 2013b, 172.) In effect, this means that he justifies the inclusion of all kinds of historical 'humanistic' methods (in his explanation in the sense of being involved in the study of art, literature, music, and so on, cf. Bod 2013a, 2) that aim at an uncovering of principles or a representation of some kind of 'regularity', whether universal or local; he himself in his endeavour seeking such patterns without a clearly delineated point of comparison. One could, for example, advance a thesis that the humanities are concerned with a universal understanding of 'human situatedness in space and time' and in such a scenario, one would most likely find ample evidence throughout the ages and different world regions to suit such an argument; accumulating such evidence would not, however, prove the thesis right if it did not fairly consider evidence to the contrary; doing so would make it a difficult, in the sense of necessarily exhaustive and comprehensive, argument to make, but such is the evidentiary burden of broad claims.

125 For some literature on these figures and their relationship with *Einfühlung* as well as the general genealogy of the concept in the late 19th century, see Frank Büttner, "Das Paradigma ‚Einfühlung' bei Robert Vischer, Heinrich Wölfflin und Wilhelm Worringer: Die problematische Karriere einer kunsttheoretischen Fragestellung," in: *200 Jahre Kunstgeschichte in München: Positionen, Perspektiven, Polemik 1780-1980* (Münchner

the emotional, however, and we find echoes of this debate reverberate throughout the scholarship of the time. Even Leopold von Ranke, one of the 'founding fathers' of history as an academic discipline in Germany who is famous for his introduction of source-criticism and infamous for his oft-misunderstood dictum that historians should recount history "as it really was,"[126] "intended […] that the historian should try to put himself into the position of his object/subject of study in order to be able to understand the intentions and motives of historical actors [and] [b]y a rigid study of historical sources […] reveal the 'inner connection between historical events'."[127]

This was refined, under the additional influence of the writings of Friedrich Schleiermacher, by Johann Gustav Droysen who argued that the historian could not be a mere arbiter of facts as found in the sources but necessarily had to shape them through their own *Verstehen* ('understanding').[128] The concept of *Verstehen* was subsequently further refined

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Universitätsschriften des Instituts für Kunstgeschichte; vol. 2), ed. by Christian Drude and Hubertus Kohle, München: Deutscher Kunstverlag, 2003, 82–93; Tobias Wilke, "Einfühlung als Metapher," in: *Deutsche Vierteljahrsschrift für Literaturwissenschaft und Geistesgeschichte* 88/3 (2014), 321–344; Rainer Schützeichel, "Architecture as Bodily and Spatial Art: The Idea of Einfühlung in Early Theoretical Contributions by Heinrich Wölfflin and August Schmarsow," in: *Architectural Theory Review* 18/3 (2013), 293–309, online: <https://doi.org/10.1080/13264826.2014.890007>; and Robin Curtis, "An Introduction to Einfühlung," transl. by Richard George Elliott, in: *Art in Translation* 6/4 (2014), 353–376, online: <https://doi.org/10.1080/17561310.2014.11425535>.

126 Leopold von Ranke, *Geschichten der romanischen und germanischen Völker von 1494 bis 1514: Zur Kritik neuerer Geschichtsschreiber* (Sämmtliche Werke; vol. 33 and 34), Leipzig: Duncker & Humblot, 1874, VII: "Man hat der Historie das Amt, die Vergangenheit zu richten, die Mitwelt zum Nutzen zukünftiger Jahre zu belehren, beigemessen: so hoher Aemter unterwindet sich gegenwärtiger Versuch nicht: er will blos [sic!] zeigen, wie es eigentlich gewesen." On this topic, see furthermore Mario Wimmer, "Wie es eigentlich gewesen," in: *Enzyklopädie der Genauigkeit*, ed. by Markus Krajewski, Antonia von Schöning and Mario Wimmer, Konstanz: Konstanz University Press, 2021, 514–531.

127 Andreas Fickers, "Towards a New Digital Historicism? Doing History in The Age of Abundance," in: *Journal of European Television History and Culture* 1/1 (2012), 19–26, online: <http://doi.org/10.18146/2213-0969.2012.jethc004> [online without page numbers; in the PDF on page 2].

128 See Johann Gustav Droysen, *Grundriss der Historik*, Leipzig: Veit, 1868, online: <https://www.deutschestextarchiv.de/droysen_historik_1868> (accessed 11 February 2023).

by Wilhelm Dilthey, one of the central figures in hermeneutics. Dilthey in particular used *Verstehen* as a contrast to the concept of *Erklären* ('explaining') that he ascribed to natural sciences.[129] Unlike the scholarly embeddedness of empathy in the Romantic era, to use that example since we have already familiarized ourselves with it, albeit superficially, Dilthey's concept of *Verstehen* and *Nacherleben* ('re-experiencing') was not intended to mean that a historian should identify with their subject or project their self onto an other in a way that would elevate a cognitive form of comprehension to a biased and possibly naïve form of involvement; Dilthey, who, we may note *en passant*, was not primarily a historian but might be better described as a *Wissenschaftsphilosoph* ('philosopher of science'),[130] does not speak of *Einfühlen* ('feeling-into') so much as he does of *Nachfühlen* ('re-feeling' or 'feeling-towards' or 'feeling-backwards-into' after the fact, reminiscent of *nachspüren*, 'tracing') and *Nacherleben* ('re-experiencing') which clearly denotes a historical situatedness of the historical subject which is not supposed to be superimposed by the present, as has also been pointed out in some of the more recent re-evaluations of his work.[131] The inadequate understanding of this distinction and, indeed, a failure to understand something as simple as the fact that Ranke, for as much as he proclaimed otherwise,

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129 Cf. Karsten Stueber, "Understanding Versus Explanation? How to Think about the Distinction between the Human and the Natural Sciences," in: *Inquiry* 55/1 (2012), 17–34, online: <https://doi.org/10.1080/0020174X.2012.643621>.

130 Whose contributions to the philosophy of science were so manifold that a collected volume about them can apparently be assembled without containing any mention of the issue of empathy or *Einfühlung* or *Nachfühlung* at all; see Christian Damböck and Hans-Ulrich Lessing (Eds.), *Dilthey als Wissenschaftsphilosoph*, Freiburg / München: Karl Alber, 2016.

131 Cf. Shaun Gallagher, "Dilthey and Empathy," in: *Interpreting Dilthey: Critical Essays*, ed. by Eric S. Nelson, Cambridge: Cambridge University Press, 2019, 145–158, online: <https://doi.org/10.1017/9781316459447.008>. Rudolf Makkreel pointed out several decades ago that Dilthey is "often confused with Historical Idealists such as Croce and Collingwood" (Rudolf Makkreel, *Dilthey: Philosopher of the Human Studies*, Princeton: Princeton University Press, ^{3}1992, 5 [originally published in 1975]) in a supposed aversion to the "use of general laws" (ibid.). Harrington demonstrates that the differences between *Einfühlen*, *Nachfühlen,* and, indeed, *Mitfühlen* ('feeling-with' – *Mitgefühl* meaning 'sympathy,' 'compassion'), the latter of which was *not* supposed to be a feature in a scholar's work according to Dilthey, are of importance in this debate and inadequately captured by the vague English term 'empathy', cf. Harrington 2001, 318f. which is also affirmed in Gallagher 2019, *passim*.

was not devoid of a framework of mind that colours his work as much as any scholar's time and person colour their work, and that he and Michelet, for example, are set apart by the ductus and style of their scholarship more so than by their rigour or quest for truthful accounts,[132] was partly at the root of the disregard shown for the concept of empathy in the philosophy of science in the 20th century;[133] all the while the ability to mentally assume a different perspective other than one's own is the very foundation of depersonalizing one's work even if such a depersonalization does not automatically follow from it nor can be achieved in full; and even if one might employ other means of externalization as well. The relegation of these discourses to the annals of history themselves is regrettable insofar as we see this lack of engagement continue in the scholarship by prominent researchers such as Bod in the context of the digital humanities. One cannot, for example, adequately understand Karl Lachmann and the stemmatological method without also being aware of the kind of literary studies that scholarly editions were being used for or the arguments Jacob Grimm was making, in addition to and sometimes in contrast to him,[134] or, indeed, without considering the arguments by the *New Philology* movement that show how Lachmann's methodology cannot simply be equated with 'scientificity' and 'rigour' (and that stemmatology is, in fact, largely misattributed to him as a methodological invention);[135] and when one discusses the *Annales* school and the *histoire sérielle*,[136] one might also want to make mention of the contrasting notion of *microhistoire* as practiced, for example, by

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132 Cf. White 2014, 157f.

133 That disregard is comparable to the disregard shown for the concept of imagination: "Au même titre que l'imagination, l'empathie fut dédaignée par la philosophie tout au long du XXème siècle." (Emmanuelle Glon, 'Empathie,' in: *l'Encyclopédie philosophique* (academic version, July 2017), ed. by Maxime Kristanek, online: <http://encyclo-philo.fr/empathie-a/> (accessed 11 February 2023).)

134 Jacob Grimm only features in Bod's history with regard to his contributions to comparative linguistics, cf. Bod 2013a, 281–283.

135 Cf. Giovanni Palumbo, "Criticism and Controversy," in: *Handbook of Stemmatology: History, Methodology, Digital Approaches*, ed. by Philipp Roelli, Berlin / Boston: De Gruyter, 2020, 88–108.

136 For an example of which, see Fernand Braudel, "Pour une histoire sérielle: Séville et l'Atlantique (1504-1650)," in: *Annales: Économies, Sociétés, Civilisations* 18/3 (1963), 541–553. Bod discusses the *Annales* school in Bod 2013a, 258–260.

Carlo Ginzburg.[137] With regard to Dilthey and Ranke, Edith Stein may have stated the dilemma they were – and, we may extrapolate, most if not all humanists are – faced with most succinctly:

> We now see why Dilthey can rightfully claim: 'the capacity for understanding that is at work in the humanities is the whole human being': only one who experiences themselves as a person, as a meaningful whole, can understand other persons. And we understand just as well why Ranke wants to 'delete' his self in order to see the things 'as they were'. The 'self' is the individual structure of experience; in it, the great master of understanding identifies the source of fallacy which endangers us. If we regard it as a measuring standard, we lock ourselves in the prison of our peculiarity; the others become ciphers to us or, even worse, we re-model them in our image and thereby falsify the historical truth.[138]

It is very interesting that Edith Stein uses the word *modeln* ('model') here or rather even *ummodeln* ('re-model'), a direct link to the issue of modelling; more so, a direct link to modelling something *nach unserem*

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137 The most well-known example of which is Carlo Ginzburg, *Il formaggio e i vermi: Il cosmo di un mugnaio del '500*, Turin: Einaudi, 1976. See also Carlo Ginzburg, "Microstoria: Due o tre cose che so di lei," in: *Quaderni storici* 29/86 (1994), 511–539, and the German translation of a collection of his essays in Carlo Ginzburg, *Spurensicherung: Die Wissenschaft auf der Suche nach sich selbst* (Kleine kulturwissenschaftliche Bibliothek; vol. 50), transl. by Gisela Bonz and Karl F. Hauber, Berlin: Wagenbach, 1995.

138 Edith Stein, *Zum Problem der Einfühlung*, Halle: Buchdruckerei des Waisenhauses, 1917, 129 [originally submitted as part II/IV of her dissertation in 1916 under the title *Das Einfühlungsproblem in seiner historischen Entwicklung und in phänomenologischer Betrachtung;* supervised by Edmund Husserl], original: "Wir sehen jetzt, mit welchem Recht Dilthey sagen kann: ‚das auffassende Vermögen, welches in den Geisteswissenschaften wirkt, ist der ganze Mensch': nur wer sich selbst als Person, als sinnvolles Ganzes erlebt, kann andre Personen verstehen. Und wir verstehen ebensogut, warum Ranke sein Selbst ‚auslöschen' möchte, um die Dinge zu sehen, ‚wie sie gewesen sind'. Das ‚Selbst' ist die individuelle Erlebnisstruktur; in ihr erkennt der große Meister des Verstehens die Täuschungsquelle, von der uns Gefahr droht. Wenn wir sie als Maßstab nehmen, dann sperren wir uns ein ins Gefängnis unserer Eigenart; die andern werden uns zu Rätseln oder, was noch schlimmer ist, wir modeln sie um nach unserem Bilde und fälschen so die historische Wahrheit." On the topic of her empathy theory, see also Fredrik Svenaeus, "Edith Stein's Phenomenology of Sensual and Emotional Empathy," in: *Phenomenology and the Cognitive Sciences* 17 (2018), 741–760.

Bilde ('in our image'). Goethe's *Faust* (1808) comes to mind: "What you the Spirit of Ages call / Is nothing but the spirit of you all, / Wherein the ages are reflected."[139]

Another aspect that should not be forgotten is that the issue of *Einfühlung* and what it may or may not indicate for the processes in the humanities that produce knowledge (inspire knowledge, suggest knowledge, enable knowledge) is closely entangled with the issue of intersubjectivity, which is why we find Edmund Husserl deeply entrenched in those very same questions.[140] Discourses in the digital humanities will sometimes, if at all, reference Heidegger, but other pertinent philosophers are curiously neglected.[141] The question is perhaps not so much what makes the humanities unique – for that would assume that they are, a distinction entirely irrelevant – but rather what makes them as they are. If the digital humanities are a cause for discomfort about the nature of the humanities – if they entertain, for example, a "lure of objectivity"[142] by springing "pseudopositivist trap[s]"[143] – then they have to engage with the long histories of such debates. Intersubjectivity as an approximation of shared understanding that neither commits to a positivist universalism nor disappears into individualized relativism would

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139 Here in the translation by Bayard Taylor; Johann Wolfgang von Goethe, *Faust: A Tragedy*, transl. by Bayard Taylor, London [et al.]: Ward, Lock & Co., [3]1890, 18. Original German: "Was ihr den Geist der Zeiten heißt, / Das ist im Grund der Herren eigner Geist, / In dem die Zeiten sich bespiegeln." (*Johann Wolfgang Goethe: Faust. Historisch-kritische Edition*, ed. by Anne Bohnenkamp, Silke Henke and Fotis Jannidis [et al.], Frankfurt am Main [et al.], 2016–present; here *Der Tragödie Erster Theil*, 'Nacht,' lines 577–579, online: <http://www.faustedition.net/print/faust.4#l577> (accessed 11 February 2023).)

140 See Rudolf A. Makreel, "How is Empathy Related to Understanding?" in: *Issues in Husserl's Ideas II* (Contributions to Phenomenology; vol. 24), ed. by Thomas Nenon and Lester Embree, Dordrecht: Springer, 1996, 199–212.

141 See, for example, McCarty 2005, 41–43. McCarty does mention that there are "strains of phenomenology [that] contribute to a philosophy of modelling" and that they "include most notably [...] Edmund Husserl (1859–1938), Heidegger's teacher, and Maurice Merleau-Ponty (1908–61)" but he also acknowledges that he "passes over these in silence" (ibid., 43).

142 Augustine Farinola, "Hermeneutical Postphenomenology: Computational Tools and the Lure of Objectivity," in: *Digital Scholarship in the Humanities* 38/3 (2023), 1078–1087, here 1081, online: <https://doi.org/10.1093/llc/fqac074>.

143 Fafinski 2022, 100.

seem like a useful concept to discuss further, especially given the perspectivity and positionality of modelling.[144]

F.
THE SPECTRE OF INTERPRETATION

Until such a discussion is had by the field at large,[145] modelling concerns are forced into the narrow confines of the practices already at play:

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144 Elena Pierazzo expresses a similar sentiment when she states: "The concept of intersubjectivity was deeply influential in the development of modern epistemology, sociology and psychology, as well as linguistics, while in the digital humanities it seems that we are still lingering on a misconception of which epistemic virtues are at the basis of the scientific method." (Pierazzo 2018, 129.)

145 Since Bod reduces Dilthey's hermeneutics to an "anticipatory 'method'" (Bod 2013a, 333) and insinuates that it is "commit[ted] [...] to 'premonitions'" (ibid., 334) unlike the supposedly related post-structuralism which may be "often obscure" (Bod 2013a, 334) but at least not "outside the scope of our quest for methodical principles" (ibid.), we might note here, as far as the digital humanities discourse goes, that references to figures such as Dilthey or Schleiermacher can be found in discussions taking place in the *Humanist* mailing list / discussion group maintained by Willard McCarty, for example in the June 2018 thread "32.107 Fish'ing for fatal flaws," cf. <http://lists.digitalhumanities.org/pipermail/humanist/2018-June/015674.html> (accessed 26 June 2018; not accessible anymore 11 February 2023; see the archived version in the Internet Archive). Here, Francois Lachance mentions Schleiermacher by way of quoting Frank Kermode, *The Classic: Literary Images of Permanence and Change*, Cambridge, Massachusetts [et al.]: Harvard University Press, 1983, 77 [originally published in New York: Viking Press, 1975]. The wider context of the discussion is criticism levelled at the field of digital humanities by Stanley Fish (repeatedly over the years but in this case in Fish 2018). The discussion of the criticism soon revolves around "mathphobia" (cf. "32.103 Fish'ing for fatal flaws" <http://lists.digitalhumanities.org/pipermail/humanist/2018-June/015670.html> (accessed 26 June 2018; not accessible anymore 11 February 2023; see the archived version in the Internet Archive) and the subsequent replies to the thread). That Kermode himself relies on translations of and introductions to Dilthey and Schleiermacher (as he himself acknowledges in Kermode 1983, 76, fn. 1) is not mentioned in the *Humanist* discussion; neither is the very specific meaning of 'divination' in Schleiermacher's work that the quoted part of Kermode 1983, 77 emphasizes as the way to break the hermeneutical circle and further describes as "an act of interpretive genius" (ibid.). That Schleiermacher's use of *Divination* must be seen in the tradition of Schlegel and Kant and as a type of *Einbildungskraft* ('imagination' in a sense of cognitive capacity for perception) more so than what is commonly referred to as divination in English, namely *göttliche Eingebung* ('divine inspiration'), is not mentioned either. These omissions threaten to mischaracterize the methodological writings of both Schleiermacher and Dilthey and do little to penetrate the shallow type of evocations they are reduced to in a digital humanities context (and, perhaps, even beyond that). For an in-depth discussion

graphs, networks, maps, trees. Et cetera. It is, perhaps, no coincidence that the discourse about modelling in the humanities is dominated by the digital humanities; that they are entwined, even if just on the mundane level of the scholars involved in those discussions.[146] In Bod's case, it might be fair to say that his interest lies with all forms of pattern-search more so than the humanities as such.[147] It is, in that sense, reminiscent of interests in the field of artificial intelligence and recalls McCarty's verdict with regard to such inquiries:

> 'Perhaps there are some kinds of knowledge that cannot be expressed in logic', the author of *Knowledge Representation: Logical, Philosophical, and Computational Foundations* declares (Sowa 2000: 12). Perhaps indeed – but we hear no more about them under that roof.[148]

This evokes Hans Vaihinger's formulation that "our ideational construction of the world is an enormous web of fictions, full of logical contradictions."[149] One does not have to speak of 'contradictions' necessarily to recognize that modelling in science as well as in the humanities may have to be understood as a way of coherently structuring the world around

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of Schleiermacher and his use of the term *Divination*, see Andreas Arndt, "Hermeneutik und Einbildungskraft," in: *Friedrich Schleiermachers Hermeneutik: Interpretationen und Perspektiven*, ed. by Andreas Arndt and Jörg Dierken, Berlin / Boston: De Gruyter, 2016, 119–128.

146 I would like to borrow Mario Wimmer's term of 'epistemic surroundings' here even though he applied it to mean the level of influence that scholarship – or the scholarly curation of materials – has on other scholarship, i.e. "scholarly production as a process of intellectual labor with what is at hand" (Mario Wimmer, "The Afterlives of Scholarship: Warburg and Cassirer," in: *History of Humanities* 2/1 (2017), 245–270, here 248). The term could, however, also be useful in describing enclosed spheres of communication in diverse, interdisciplinary fields such as the digital humanities.

147 The publication Rens Bod, *World of Patterns: A Global History of Knowledge*, transl. by Leston Buell, Baltimore: Johns Hopkins University Press, 2022, could be seen as confirmation for this. For the Dutch original, see Rens Bod, *Een wereld vol patronen: De geschiedenis van kennis*, Amsterdam: Prometheus, 2019.

148 McCarty 2005, 30.

149 Vaihinger 1911, 90, original: "Unser Vorstellungsgebilde der Welt ist ein ungeheures Gewebe von Fiktionen, voll logischer Widersprüche." *Vorstellungsgebilde* is extremely difficult to translate here, potentially denoting imagination, perception, conceptualization, ideation, vision, mental image, understanding.

us; which is not the same as entirely *constructing* it in the sense of inventing it through language or conceptualization. If there were no material basis for our perceptions, no paintings, manuscripts, historical records, archaeological excavations, nothing to analyse and disagree on, nothing to *interpret* – and what use is an awareness of a pattern, computationally recognized or otherwise, if no one asks what it tells us? –, then what would be the purpose of the humanities? The naming of a thing does not make the thing come into existence; the naming follows from its existence and is a way to help us understand its existence. Models in the humanities are not 'make-believe'[150] so much as they are 'making-sense' and insofar as the humanities study products of the human mind and the conditions of their production throughout time and, in fact, the conditions of human thinking throughout time, they necessarily draw on the connective tissue that the capacity for human thinking accords us ourselves. A theologian might enter the notion of *souls* and the study of the *remnants* of ensouled beings into the debate,[151] but we do not need to resort to such opaque vocabulary: It is enough to acknowledge that "recognizing the thoughts of individual agents has to play some role in the interpretive project of the human sciences"[152] and that humanistic inquiry is not rooted in solipsistic study. It is rooted in questions such as: How did this come into being? Why did this come into being? What did it mean to someone who lived hundreds of years ago? What does it mean

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150 Which is one of the ways that models in a tradition of Vaihinger's fictionalism have been framed as; see Adam Toon, *Models as Make-Believe: Imagination, Fiction and Scientific Representation*, Basingstoke [et al.]: Palgrave Macmillan, 2012. See also Ronald N. Giere, "Why Scientific Models Should Not Be Regarded as Works of Fiction," in: *Fictions in Science: Philosophical Essays on Modeling and Idealization*, ed. by Mauricio Suárez, London: Routledge, 2009, 248–258.

151 Indeed, one does have not to be a theologian to do so, as the concept of that which is *fremdseelisch* ('of another soul') and our capacity for perceiving it plays an important role in German philosophical discourses about hermeneutics in the tradition of Dilthey and Husserl; cf. Verena Mayer, "Einfühlen und Verstehen: Husserls Beitrag zur Empathie-Debatte," in: *The Philosophy of Edmund Husserl* (Logical Analysis and History of Philosophy / Philosophiegeschichte und logische Analyse; vol. 16), ed. by Uwe Meixner and Rochus Sowa, Leiden: Brill, 2013, 220–243, here esp. 229–233, online: <https://doi.org/10.30965/9783897858596_013>.

152 Karsten Stueber, 'Empathy,' in: *The Stanford Encyclopedia of Philosophy* (Fall 2019 Edition), ed. by Edward N. Zalta, online: <https://plato.stanford.edu/archives/fall2019/entries/empathy/> (accessed 11 February 2023).

to a modern-day reader? What did it mean to the author? What does it mean to an audience, an observer, a listener, a painter, a composer, what do they mean to each other, what did they mean to each other? What does it mean to others? What *should* it mean to others? What meaning should others take from it (even if only asked from the perspective of a researcher publishing their research)? In a certain postmodern vein – although, as Manfred Frank notes, that term would seem to be favoured by "representatives of the 'pensiero debole'"[153] and "has the consistency of a pudding that one is supposed to nail to the wall"[154] –, some scholars might even be asking: Does it mean anything at all? (Alternatively: What does it mean to *me*?)

It is not – and this might not need saying but better to state it: It is not or should not be an expectation of the digital humanities that they are able or will be able to transmutate humanistic research in all of its dimensions into a digital environment; or that they will be able to enhance all of these dimensions, never mind what one deems the important dimensions, through computational ways of exploration or representation; one would think this self-evident but it might not be, otherwise we would see other types of fundamental discussions in the digital humanities. The spectre of 'interpretation' looms large. Where and when does meaning begin, and where and when does it enter into that which we model?

There is a lowest common denominator, and it is arguably the reason why the digital humanities are so document- and artefact-oriented. Instead of asking *what does it mean*, we may ask *what does it say*, *what does it depict*, *how can it be represented* and those are already difficult enough to answer but it could be that these are the only types of questions that we may legitimately ask in that context. This is where the evidence comes in: The wide range between the material tradition, the

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153 Frank 2011, 364, original: "[...] von den Vertretern des ‚pensiero debole' [...]." The *pensiero debole* is a specific Italian tradition of poststructuralist thinking that originated with the publication of Gianni Vattimo and Pier Aldo Rovatti (Eds.), *Il pensiero debole*, Milano: Feltrinelli, 1983.

154 Frank 2011, 364, original: "[...] der [...] etwa die Konsistenz eines Puddings hat, den man an die Wand nageln soll [...]."

information that can be gleaned from it, and all the ways in which we structure our theories about said corpus of knowledge. This corpus will often already contain more than is strictly evidentiary: We will identify named entities and disambiguate them and associate them with each other or with coordinates on a map or with dates on a timeline. In the realm of traditional scholarship in the humanities, as important as this is, many would perceive it to be a basic prerequisite for answering research questions, not meaningful in itself. But why, may I ask, do we not aim to represent the conceptualizations of our knowledge domains as such, rather than our conceptualizations of source materials? There is no rule saying that there can only be one model of something. In fact, there should not be because there cannot be. If our knowledge is an argument, and if an edition is an argument, there is nothing to suggest that a model could not be an argument – or rather, that the argument could not be a model. For that, the argument would have to consist of delineated parts that can be related to each other. That would seem to be in the realm of the achievable. Whether it is desirable is another question altogether. One has to wonder if models in the humanities were not widely discussed in explicit terms before the digital humanities came along because they are seen as overreaching into a domain of scholarly argumentation that they could not possibly satisfy.[155] There is another aspect to this: If there is, as Jim Mussell, a media historian, has observed for his own field, "a shift from documents to data,"[156] a question emerges as to how depleted the reserves of meaningful engagement are or are rather bound to become, unless a type of digital hermeneutics begins to take hold.[157]

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155 Aptly captured in the verdict that "there is a widespread sense that digital history has over-promised and under-delivered in terms of its interpretative contribution back to the discipline" (Stephen Robertson [et al.], "Digital History and Argument," white paper by the *Arguing with Digital History* working group, Roy Rosenzweig Center for History and New Media (13 November 2017), online: <https://rrchnm.org/portfolio-item/digital-history-argument-white-paper/> (accessed 11 February 2023)).

156 Jim Mussell, "Doing and Making: History as Digital Practice," in: *History in the Digital Age*, ed. by Toni Weller, London / New York: Routledge, 2013, 79–94, here 80.

157 Andreas Fickers has, thus far, been one of the strongest proponents of digital hermeneutics, in his sense mostly focused on tool criticism and the like; see Andreas Fickers, "Update für die Hermeneutik: Geschichtswissenschaft auf dem Weg zur digitalen Forensik?" in: *Zeithistorische Forschungen / Studies in Contemporary History* 17/1 (2020), 157–168, online: <https://doi.org/10.14765/zzf.dok-1765>. See also Andreas Fickers

Generally, it would seem to me that the modelling discourse in the (digital) humanities would do well – for the field going forward – to address, or address in more depth, the following desiderata (preliminary thoughts):

(1) *Abbild* and *Vorbild*. When is the primary function of a model in the digital humanities *abbildend*, when is it *vorbildend*, and how do both relate to the question of universal versus case-specific models?
(2) Semiotics. How is a model expressed or visualized and what does that say about that which can be modelled?[158]
(3) Process. What are the processes of modelling in the digital humanities? And how can we model these processes (not only as methods but also as practices)?
(4) Patterns and structures. What is our definition of a pattern, what is our definition of a structure, and how can we distinguish between the two? (And why does it matter?)
(5) Perspectivity. What types of knowledges and assumptions are embedded in our models and how can they be made explicit?
(6) Information. How do we distinguish between the factual, the extrafactual, and the counterfactual in our information representations?
(7) Simulation. Speaking of extrafactual, what is the relationship of modelling as a method in general and simulations as use cases in particular (i.e. between the static and the dynamic, between a state and a progression, between timelessness and time-boundedness)?[159]

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and Juliane Tatarinov (Eds.), *Digital History and Hermeneutics: Between Theory and Practice* (Studies in Digital History and Hermeneutics; vol. 2), Berlin / Boston: De Gruyter, 2022, online: <https://doi.org/10.1515/9783110723991>.

158 Ciula [et al.] eds. 2018 goes in that direction.

159 Simulative projects in the digital humanities typically involve a high degree of reconstruction. See, for example, the *Virtual Angkor* project, Monash University, 2018–present, <https://www.virtualangkor.com/> (accessed 13 February 2023), and the *Virtual Paul's Cross* project, NC State University, 2011–2021, <https://vpcross.chass.ncsu.edu/> (accessed 13 February 2023). On the latter, see also the discussion by Brent Nelson, "Virtual Paul's Cross Project: A Digital Recreation of John Donne's Gunpowder

(8) *Erkenntnis*. Speaking of simulation, what role, if any, should immersion play in these scenarios, e.g. should the modeller become part of the model and interact with the modelled in a way that is supposed to generate new insight, as the eTaRDiS project (2021–2023) is proposing?[160]

(9) 'Empathy machines.'[161] Speaking of virtual reality, how do projects that model the past in ways that can be experienced not only by researchers but also by society at large impact modelling concerns, both in terms of purpose and in terms of focus?

(10) A model of model-being. Could we find a way to classify models in the digital humanities? Would this be useful and if so, why?

I have begun thinking about such a model classification, similar to what Štoff had in mind. Intermittently, I have thought about it for years. It is not at a stage where I would want to put it forward; nor would it seem essential for the inquiry of this book to do so. For that, it is enough to know that the conceptual work of the following chapters will be engaged in the meta-methodological task of the *Vorbild* kind, generalizing structures (rather than patterns) of relation. However, there are a few aspects that we could note:

Earlier in this chapter, I suggested that the main distinction between models in the digital humanities might not be the material versus non-material distinction but rather one between visible (or visualized) models and those that are not. We could also think about a distinction

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Day Sermon," review, in: *Renaissance and Reformation / Renaissance et* Réforme 42/2 (2019), 189–194, online: <https://www.jstor.org/stable/26860676>, and the assessment: "*VPCP* does splendidly what a good model should: it gives shape to a body of data in a form that enables a new kind of interrogation [...]" (ibid., 193).

160 See *eTaRDiS – Exploration Temporaler und Räumlicher Daten in Immersiven Szenarien*, University of Bielefeld, 2021–2023, <https://digital-history.uni-bielefeld.de/etardis/> (accessed 13 February 2023).

161 On this phenomenon, see, for example, Chris Bevan [et al.], "Behind the Curtain of the 'Ultimate Empathy Machine': On the Composition of Virtual Reality Nonfiction Experiences," in: *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems*, ed. by Stephen Brewster and Geraldine Fitzpatrick, New York: Association for Computing Machinery, 2019, [1–12], online: <https://doi.org/10.1145/3290605.3300736>.

along the lines of the primary *Abbild* / *Vorbild* function. The simplest distinction would be to differentiate between computational and non-computational models, first and foremost. This would not necessarily be a distinction between computational and conceptual models; although it could be, depending on how narrowly or broadly we were to define 'conceptual' (viz. closer to unrealized mental models or domain models in the data modelling vein). Computer science has borrowed so many terms from philosophy, it might be time to borrow some of them back. But that is, of course, not for the digital humanities to decide. In this disciplinary context, we might want to think further about what Štoff wrote regarding mathematically and spatially similar models. While not the only examples, some of the most relevant modelling practices in the digital humanities revolve around statistical methods from computer linguistics – or what we might refer to as the 'calculation of language' (e.g. with probabilistic language models, topic models)[162] – and the '(re-) creation of objects and spaces' (e.g. 3D reconstructions).[163] If we add the simulative aspect, we might speak of the 'study of complex systems'. We could also add the 'visualization of networks' (over time). None of this is particularly formalized or subsumed but it might indicate where such considerations could go. We could find categories for that which is modelled, how it is modelled, the dimensions in which it is modelled. The purpose for which it is modelled, the context in which it is modelled. We could define primary (secondary, tertiary...) functions, attributes, and qualities that could be attached to any given model within a given

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162 For a reflection on language models in the context of NLP, see, to start with, Emily M. Bender [et al.], "On the Dangers of Stochastic Parrots: Can Language Models Be Too Big?" in: *FAccT '21: Proceedings of the 2021 ACM Conference on Fairness, Accountability, and Transparency*, New York: Association for Computing Machinery, 2021, 610–623, online: <https://doi.org/10.1145/3442188.3445922>.

163 On this topic, see, for example, Piotr Kuroczyński, "Neuer Forschungsraum für die Kunstgeschichte: Virtuelle Forschungsumgebungen für digitale 3D-Rekonstruktionen," in: *Computing Art Reader: Einführung in die digitale Kunstgeschichte* (Computing in Art and Architecture; vol. 1), ed. by Piotr Kuroczyński, Peter Bell and Lisa Dieckmann, Heidelberg: arthistoricum.net, 2018, 160–181, online: <https://doi.org/10.11588/arthistoricum.413.c582>, and Piotr Kuroczyński, Mieke Pfarr-Harfst and Sander Münster (Eds.), *Der Modelle Tugend 2.0: Digitale 3D-Rekonstruktion als virtueller Raum der architekturhistorischen Forschung* (Computing in Art and Architecture; vol. 2), Heidelberg: arthistoricum.net, 2019.

category. No such system would ever be complete or normative; it would, as any other model of anything, communicate a point of view in order to facilitate an understanding of self – in the case of *Wissenschaft*, perhaps most importantly, a methodological understanding of self.

This would still leave a major issue unattended, namely the issue what role models and modelling play in the chain of reasoning within the (digital) humanities. I have posed the question whether we could model our arguments beyond that which we can express in relatively unambiguous terms about source materials (source units, language, music, mathematically, generally; witnesses of culture manifested materially, historically) and the relation of basic entities. If we could do so – if we were to do so –, it would necessitate a reflection on the partial nature of these representations, which is also to say, the partial nature of the argument. We could, if we were inclined to do so, find indications for this in the hermeneutics of Schleiermacher and Dilthey or, indeed, August Boeckh and his famous dictum of the *Erkenntnis des Erkannten* ('coming to know that which was already known' or 'finding that which has been found' or 'realizing the realized') where the humanities make sense of that which is already sense-imbued. This is not a "linear uncovering of a meaning that can always be presumed to be unambiguous but rather a drawing-near to determined-undetermined structures of meaning that are approached simultaneously from multiple directions [...] in a circular motion."[164]

While this may sound obscure, I cannot help but be struck by the "principle of a productive impenetrability"[165] (*Unergründlichkeit* in a sense of unknowability) in the humanities which may only ever produce "findings which remain *approximative*"[166] and I suspect that this

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164 Frithjof Rodi, *Erkenntnis des Erkannten: Zur Hermeneutik des 19. und 20. Jahrhunderts*, Frankfurt am Main: Suhrkamp, 1990, 87f., original (full sentence): "‚Erkenntnis des Erkannten', das Wort in einem auch mit Diltheys Position zu vereinbarenden Sinn genommen, ist nicht einliniges Aufdecken eines stets als eindeutig vorauszusetzenden Sinnes, sondern ein von vielen Seiten her gleichzeitig vorgehendes, in wechselseitiger Formierung der Ansätze zirkulär verfahrendes Sich-annähern an bestimmt-unbestimmte Sinnstrukturen, in deren approximative Artikulation auch das einzubringen ist, was oben (S. 68) als Erlebnis-Ausdruck bezeichnet wurde."

165 Ibid., 97, original: "Prinzip der produktiven Unergründlichkeit."

166 Rodi 1990, 97, original: "durch die Betonung [...] ihrer immer nur *approximativ* bleibenden Ergebnisse." (Emphasis in the original.)

traditional philosophy of the humanities – in the German tradition, at the very least – would pair well with modelling as a method, if conscious of the fact that understanding, insofar as it requires a familiarity with the objects of study, the methods of study, and the conclusions that may be drawn from the chosen approach, is not and may never be contingent on a single data point any more than a single mind. It is here that we can see what is truly at stake in the digital humanities: not the simplification of models but the delegation of simplification.





III beyond print

Having discussed some fundamental considerations of discipline and methodology, we cannot proceed further without acknowledging that there is a situatedness to the inquiry of the book: a spatio-temporal horizon that is particularly pronounced when we endeavour to understand the principles of *digital* scholarly editing. This situatedness within a landscape of technologies and practices will date any description of the state of the art in due course. Describing such a state is therefore not the aim. (Although a description of practices will be involved.) Instead, the chapter identifies aspects of the shift from book to screen, print to digital, in order to contour the modelling *environment* that we find ourselves in. This is discussed along the axes of six phenomena: A. (Re-)Materialization, B. Spatialization, C. Multimedialization, D. Differentiation, E. Connection, F. Interfacing.

Digital editions are mutable objects: they change because the technology around them changes, and therefore they are forced to adapt to it; they change because they can be changed; and they change because they are inherently mutable, interactive objects.

Elena Pierazzo, *Digital Scholarly Editing: Theories, Models and Methods*, London: Routledge, 2016, 184.

III

dimensions of editing

beyond the paradigm of print

There are many different ways in which to understand the shift from books to computers as the main conduits of scholarship. So far, we have been focused on general questions of methodology. "With technical means," leading palaeographer Bernard Bischoff wrote in 1979, "palaeography, which is an art of seeing and understanding, is on its way to becoming an art of measuring."[1] (Instead of 'understanding' he speaks of *Einfühlung*, of course, here denoting understanding based on experience, familiarity, attentiveness, and sensibility.)[2] This recalls discourses about operationalization: According to Axel Pichler and Nils Reiter, operationalization "consists of developing the necessary steps to unambiguously assign the instantiations of a concept to this very concept and thus measure it."[3]

If we were to continue with that methodical train of thought, we could query the transition of editions printed in books to editions realized in a

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1 Bernhard Bischoff, *Paläographie des römischen Altertums und des abendländischen Mittelalters* (Grundlagen der Germanistik; vol. 24), Berlin: Schmidt, 1979, 17, original: "Mit technischen Mitteln ist die Paläographie, die eine Kunst des Sehens und der Einfühlung ist, auf dem Wege, eine Kunst des Messens zu werden."

2 Elena Pierazzo has pointed out that the translation of Bischoff's *Einfühlung* has been debated for a long time, especially in Italian scholarship in the 1990s, cf. Pierazzo 2018, 129, fn. 1. The main question seems to have centred on whether Bischoff meant to indicate 'comprehension' or 'intuition' – as might be clear from my own translation, I do not find 'intuition' an adequate translation since it implies a subconscious act of *Divination* rather than the active perspective-taking of *Einfühlung*; perspective-taking in this case indicating an immersion in and awareness of context rather than a change of interpersonal point of view.

3 Pichler / Reiter 2022, [1].

digital environment from the perspective of *atomization*: a 'preparation for measuring' through the discretization of information. This might be most immediately relevant to those interested in performing certain types of textual computational analysis.

Another avenue to explore is the question whether and how digital scholarly editing impacts the conceptual dimensions of editions, and this is the one I would like to pursue here. I take the liberty of proposing six dimensions that I deem suited for discussion:

A. (Re-)Materialization
B. Spatialization
C. Multimedialization
D. Differentiation
E. Connection
F. Interfacing

The purpose of this categorization is to refocus our attention, not to indicate a finite array of separate phenomena. We could, for example, think of other terms just as easily: 'Visualization' might be the most obvious one. It is not included here because I find it of limited use. Some, like Thomas Stäcker, have argued that digital editions are not visible and perhaps do not even have to be visible in order to exist; in that view, the oft-invoked separation between a 'data layer' and a 'presentation layer' grants them a life independent of their representational function.[4] This merits debate. On the one hand, it solves the issue of longevity (or appears to solve it) by rooting the essence of the edition in the component most likely to survive software changes and server updates, namely the 'plain' TEI/XML encoding of a text, in most cases. On the other hand, it risks losing sight of what an edition is, at its core: a publication of material; a making-accessible for readers and users, not just those willing to peek 'under the hood'. Every edition has always engaged in visualization, even if that visualization was the presentation of an edited

4 Cf. Thomas Stäcker, "›A Digital Edition Is Not Visible‹: Some Thoughts on the Nature and Persistence of Digital Editions," in: *Zeitschrift für digitale Geisteswissenschaften* 5 (2020), online: <https://doi.org/10.17175/2020_005>.

text in a book. With digital editions, there may be options for multiple outputs, based on the same data. But does an edition that has no output whatsoever exist as an edition, rather than as a base for an edition? Degrees of visibility would seem to be inherently linked to the viability of editions. In that sense, they are not a topic particular to *digital* editions. Sketching the new (or newly emphasized) dimensions of digital editions will be the task of this chapter, however, and while visualization has a role to play in that, we should seek to be more specific where we can. Consequently, the first aspect that appears to be a distinct feature of digital editions is not *that* they visualize something but rather *what* they visualize – beyond 'text' and beyond what would have been considered a component of an edition under a printed paradigm, as we already saw in our tentative discussion of facsimile editions. Let us therefore begin to understand the modelling environment of digital editions not as a new one necessarily but as a reconceptualized one:

A.
(RE-)MATERIALIZATION

At first glance, identifying materialization or re-materialization as a significant aspect of *digital* scholarly editing might actually seem counter-intuitive. Digitization is more often associated with a process of *dematerialization*. As Patrick Sahle has pointed out, equating digitization with dematerialization presupposes a perception of materiality.[5] He accepts the premise of a "vanishing of materiality"[6] of the original, nevertheless, and connects the inter-medium state – the transition to a state of digital representation – with his theory of a "'demedialization', or 'premedialization' or 'transmedialization'."[7] We will return to this discussion of medialization in **SECTION C**.

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5 Cf. Sahle 2013c, 193.
6 Ibid. Original: "Verschwinden der Materialität."
7 Sahle 2013c, 193.

As far as materialization is concerned, it is understandable that digitization would be thought of as a process of dematerialization where it is thought to consist of 'detaching' information from a sheet of paper and releasing it into a digital realm commonly imagined to be disembodied or, in other words, immaterial, becoming *data* only after its detachment and becoming *running text* once attached to a sheet of paper again; to give one example. This documentary view on the subject might have its merits, but it is potentially misleading in its confusion over what is and is not a material form of storage, as well as what is and is not a matter of degree of 'detachability'.

When it comes to scholarly editions, there is a different angle one might want to consider: the *visibility* and *invisibility* of materiality; materiality taken to mean the material existence of the source material that is to be edited, not the material state of the edition itself. That this has not received more attention is peculiar since the *New Philology* movement was quite explicitly interested in the materiality of codices, hence the term *Material Philology* which Stephen G. Nichols championed in particular,[8] and this heritage remains active within the field of textual criticism to this day. That emphasis on materiality has, however, if anything, taken a predictable turn when confronted with the digitization of manuscripts, as noted at the beginning of **CHAPTER I**, giving way to fears "that the digital artifacts somehow [pose] a threat to [the] 'originals'," [9] something that led Nichols himself to wonder: "What's so offensive about them?" [10] We must leave the answer to this question to those who would, in Nichols' view, seem to be offended.

But what about scholarly editions specifically? Is it not true that scholarly editions have, in the past, rarely contained any representation of the source material in its materiality at all, aside from a short description? And is it not equally true that digital scholarly editions almost always

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8 See Stephen G. Nichols, "Why Material Philology? Some Thoughts," in: *Philologie als Textwissenschaft: Alte und neue Horizonte* (Zeitschrift für deutsche Philologie, special issue; vol. 116), ed. by Helmut Tervooren and Horst Wenzel, Berlin: Erich Schmidt, 1997, 10–30.
9 Nichols 2016, 44.
10 Ibid., 45.

feature a pictorial representation of the material object and, in many cases, not just of each and every leaf but also of the binding? Or, differently put, is it not true that they at least could, if they do not yet? The point of comparison is not the digitized manuscript versus the physical codex – it is the visibility versus the invisibility of the source material in a scholarly edition of the contents of said sources. This matters greatly, as we will come to see throughout the rest of the book. It matters for the contents that are much more closely tied to that materiality than 'text' presumably is and it matters for the aspect of spatialization.

I would not want to suggest that this *Sichtbarmachung* (visualization – 'making-seen') of materiality in digital scholarly editions has not been noticed or discussed at all. Where it has, it has usually been in connection with codicological considerations.[11] Elena Pierazzo and Peter Stokes have referred to it as "putting the text back into the context"[12] and specifically advocated for a more holistic approach that integrates the codex as a physical object into the presentation and conception of the edition. Peter Robinson countered in 2013 that "this attention to documents"[13] could lead to a "flood of facsimile editions in digital form ('digital documentary editions', to use Pierazzo's term)."[14] In addition to his criticism of facsimile editions already cited before, he has stated that

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11 A specialized branch of discussion can be found in the work of Frederike Neuber who focuses on the visual aspect of typography and the fusion of typographical features and textual expression and has been doing important work in that regard; see Frederike Neuber, "Typografie und Varianz in Stefan Georges Werk: Konzeptionelle Überlegungen zu einer ‚typografiekritischen' Edition," in: *editio* 32/2 (2017), 205–232, online: <https://doi.org/10.1515/editio-2017-0012>.

12 Elena Pierazzo and Peter A. Stokes, "Putting the Text back into Context: A Codicological Approach to Manuscript Transcription," in: *Kodikologie und Paläographie im digitalen Zeitalter 2 – Codicology and Palaeography in the Digital Age 2* (Schriften des Instituts für Dokumentologie und Editorik; vol. 3), ed. by Franz Fischer, Christiane Fritze and Georg Vogeler, Norderstedt: BoD, 2011, 397–429, online: <http://nbn-resolving.de/urn:nbn:de:hbz:38-43605>.

13 Robinson 2013, 127.

14 Ibid. For the publications of Elena Pierazzo that led to Robinson's response, see Elena Pierazzo, "A Rationale of Digital Documentary Editions," in: *Literary and Linguistic Computing* 26/4 (2011), 463–477, online: <https://doi.org/10.1093/llc/fqr033>, and Elena Pierazzo, "Digital Documentary Editions and the Others," in: *The Annual of the Association for Documentary Editing* 35 (2014), [1–23], online: <https://scholarlyediting.org/2014/essays/essay.pierazzo.html> (accessed 18 February 2023).

"digital documentary editions"[15] would serve to "distance [the editors] and [their] editions from the readers."[16]

Even though Robinson makes allowance for the fact that facsimile editions must have a purpose or, at any rate, undeniably a history and presumably a future of existence,[17] their value remains unexplained as well as unexplored. A dualism is maintained that allegedly existed among printed editions: uncritical facsimile editions next to critical non-facsimile editions; the static image versus the dynamic text. Whether this might be true for printed editions is one question and our inquiry has already indicated that it is not. More pertinent, however, is the question whether such an opposition is a reality among digital scholarly editions – or likely to become one, if it is not yet. So far, no compelling argument has been made to that effect. Robinson's position furthermore fails to account for a perspective on digital editions that does not necessarily treat its audience as 'readers' but as 'viewers' and 'interactors' as well, capable of manipulating both text and image, if we take manipulation and manipulability to be a crucial attribute of models, as McCarty does.[18] It is worth noting that scholars like Elena Pierazzo have been actively engaged in the modelling debates of the digital humanities since digital scholarly editing is often viewed as a type of (textual) modelling: something malleable, in flux.[19] Views on materiality do not replace components in the modelling system (although a case could be made that they could replace highly diplomatic transcriptions if those do not serve an analytical purpose rather than a representational one); they merely add components

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15 Robinson 2013, 127.
16 Ibid.
17 Cf. Robinson 2013, 127.
18 Cf. McCarty 2005, 26.
19 See Pierazzo 2016 and Pierazzo 2018. Patrick Sahle uses the term *Modell* frequently in Sahle 2013a–c and applies it to his proposed model of a *Textrad* ('text wheel') in which he unites or rather non-hierarchically arranges different conceptions of what a text is and does, cf. Sahle 2013c, 9–49 and in particular 45–49. Of interest might also be how Anna Cappellotto situates Sahle's approach within other theories on text plurality, prompted specifically by digital practices, cf. Anna Cappellotto, "Digital Scholarly Editing and Text Reconstruction: Theoretical Perspectives and Practical Approaches," in: *Digital Philology: New Thoughts on Old Questions*, ed. by Adele Cipolla, Padova: libreriauniversitaria.it, 2018, 77–98, here 80f.

to it that have to be related to other information from and about those same source materials.

Last but not least, Robinson's argument neglects that digitized images of the source material constitute, in themselves, a form of representation that a philologist like Robinson might, understandably, not rate highly in terms of its reproductive value for a scholarly edition of text but that, nonetheless, reintroduces some of the information, although not all, that would otherwise be lost; and that information, visual as it may be, is not merely information about non-textual elements of the source material, even though it is that as well.

B.
SPATIALIZATION

One aspect that connects to this is the aspect of spatialization which is not always realized but serves, where it is, to distinguish digital scholarly editions from traditional editions. The aspect of spatialization is in itself of course not entirely novel, as few things ever are; Herbert Kraft, for example, proposed a 'theorem of spatiality'[20] for the edition of fragmentary, previously unpublished works based on his experience with the edition of Friedrich Schiller's *œuvre*.[21] Kraft juxtaposed the spatial ordering of fragments with the editorial principle of ordering them chronologically:

> The difference between both methods lies in the mode of transcription: the presentation of that

20 He did so most lengthily in Herbert Kraft, "Mehrfach besetzte Funktionspositionen als ‚Text' und die Räumlichkeit als ein Theorem der Fragmentedition," in: *Editionsphilologie*, ed. by Herbert Kraft, Darmstadt: Wissenschaftliche Buchgesellschaft, 1990, 107–124, but already presented thoughts to that effect in 1975 (see the fn. after the next).
21 The two volumes of the *Nationalausgabe* of Schiller's works that are relevant in this context, as they are the edition of the fragmentary tradition, are Herbert Kraft (Ed.), *Schillers Werke: Nationalausgabe* (vol. 11: Demetrius), Weimar: Böhlau, 1971, and Herbert Kraft (Ed.), *Schillers Werke: Nationalausgabe* (vol. 12: Dramatische Fragmente), Weimar: Böhlau, 1982. See also the characterization of the edition in Franz Suppanz, *Person und Staat in Schillers Dramenfragmenten: Zur literarischen Rekonstruktion eines problematischen Verhältnisses* (Hermaea. Neue Folge; vol. 93), Berlin: De Gruyter, ^{2}2010, 11, fn. 32.

> which has come to exist or that which is coming to exist. This, however, also leads to a difference between the work and its genesis: In the phase of creation, every single part falls into a chronological succession; in the existence of the work, however, the spatial relations that denote the significance of every single part within the whole are its structure. That which exists spatially in the fragment documents a condition that is closer to the work than that which can be registered in chronological order. For that has only the quality of the genesis, the presentation of which may be left to the editor; the other, however, has already the quality of a work structure.[22]

I quote this section because Kraft's references to a structural component – more so, a spatio-structural component – indicate once more how closely related processes of scholarly editing and processes of conceptual modelling are. Beyond that, his argument is noteworthy because it touches on a familiar conundrum: What are editors to represent? The process or the result? The *Befund* ('record') of evidence within the witnesses or a work structure with an eye towards an ideational whole? As Rüdiger Nutt-Kofoth notes, Kraft's theorem did not become popular with editors of other works as his reasoning was, according to Nutt-Kofoth, fairly specifically derived from and influenced by his experience with editing Schiller's fragments; in practical terms, this meant dealing with certain kinds of marginalia and later additions.[23]

A more wide-ranging notion of a physical and therein also spatial dimension of textuality was introduced by Jerome McGann under the

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22 Herbert Kraft, "Die Edition fragmentarischer Werke," in: *Zeitschrift für Literaturwissenschaft und Linguistik* 5/19–20 (1975), 142–146, here 143–144, original: "Der Unterschied zwischen beiden Verfahren liegt in der Art der Transkription: der Darstellung des Entstandenen oder des Entstehenden. Es führt dies aber auch zum Unterschied zwischen dem Werk und seiner Entstehungsgeschichte: In der Entstehungsphase fügt alles Einzelne sich in eine chronologische Abfolge; in der Vorhandenheit des Werkes aber sind die räumlichen Relationen, die den Stellenwert des Einzelnen im Ganzen markieren, seine Struktur. Das räumlich Vorhandene des Fragments dokumentiert einen Zustand, der dem Werk näher ist als das in chronologischer Folge Registrierte. Denn dieses hat lediglich die Qualität der Entstehungsgeschichte, die der Darstellung des Herausgebers überlassen werden kann; jenes aber hat schon die Qualität von Werkstruktur."
23 Cf. Rüdiger Nutt-Kofoth, "Schreiben und Lesen: Für eine produktions- und rezeptionsorientierte Präsentation des Werktextes in der Edition," in: *Text und Edition:*

banner of a 'bibliographical code', in contrast to the 'linguistic code' of the text.[24] Aside from the materiality of the transmission – "the different papers she [Emily Dickinson] used, her famous 'fascicles,' her scripts and their conventions of punctuation"[25] –, he sought to shift the focus towards the "page layout"[26] as well.[27] In *Radiant Textuality: Literary Studies After the World Wide Web* (2001), he further developed these ideas that Paul Eggert has characterized as "custom-made for the computing environment,"[28] even though he was sceptical about the value of the concept; his criticism might best be summed up in his verdict that "the unpredictabilities of the gap between the physical features of a book and their meaning are poor conditions for the specification of a code"[29] and "that there can be no specifiable and invariable meaning for any particular *mise-en-page*."[30]

Practices of digital scholarly editing have shown that one does not have to go as far as encoding a variety of physical features of a document or encoding it according to a rigid schema in order to achieve, for example, a certain kind of text-image alignment, which would seem to be the simplest form of visualizing spatiality: locating text on a page. (See **FIGS. 9** and **10**).

The habit of localizing a transcription within an adjacent 'digital facsimile' of the thus reproduced 'original material' has been aided by provisions of the encoding standards in the field of digital scholarly editing; to wit, the *Text Encoding Initiative* (TEI) supports pointing towards coordinates on an image (sc. a digital representation of a source material)

Positionen und Perspektiven, ed. by Rüdiger Nutt-Kofoth [et al.], Berlin: Erich Schmidt, 2000, 165–202, here 195.

24 Cf. Jerome J. McGann, *The Textual Condition*, Princeton: Princeton University Press, 1991, 56.

25 Ibid., 87.

26 McGann 1991, 87.

27 See on this topic also George Bornstein, *Material Modernism: The Politics of the Page*, Cambridge: Cambridge University Press, 2001; with regards to McGann 7f.

28 Paul Eggert, "Text as Algorithm and as Process," in: *Text and Genre in Reconstruction: Effects of Digitalization on Ideas, Behaviours, Products and Institutions*, ed. by Willard McCarty, Cambridge: Open Book Publishers, 2010, 183–202, here 191, online: <http://books.openedition.org/obp/660> (accessed 18 February 2023).

29 Ibid., 191f.

30 Eggert 2010, 192.

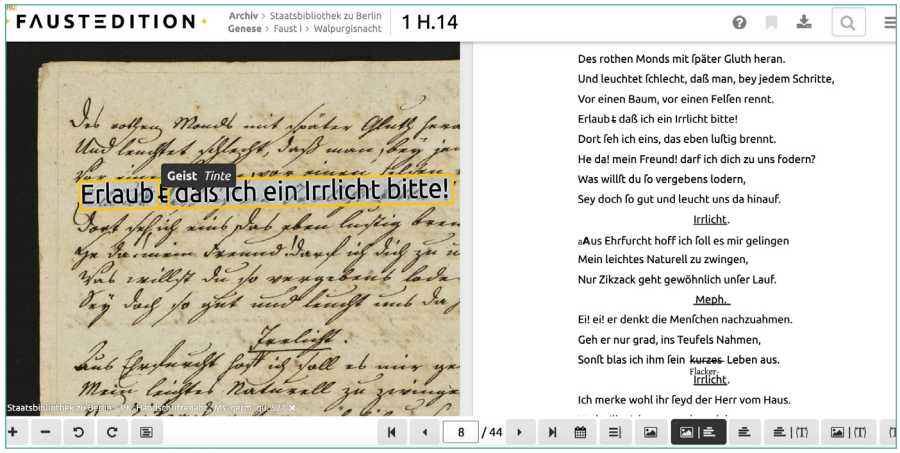


FIG. 9: Example of a text-image connection in the *Faustedition* (1.2 RC), Ms. germ. qu. 527, Staatsbibliothek zu Berlin – PK, f. 1v, where the synoptic view of the 'facsimile' and 'documentary transcription' allows for a mouseover effect on the image that highlights the corresponding text line, <http://www.faustedition.net/document?sigil=1_H.14&page=8&view=facsimile_document> (screen capture 29 June 2020).

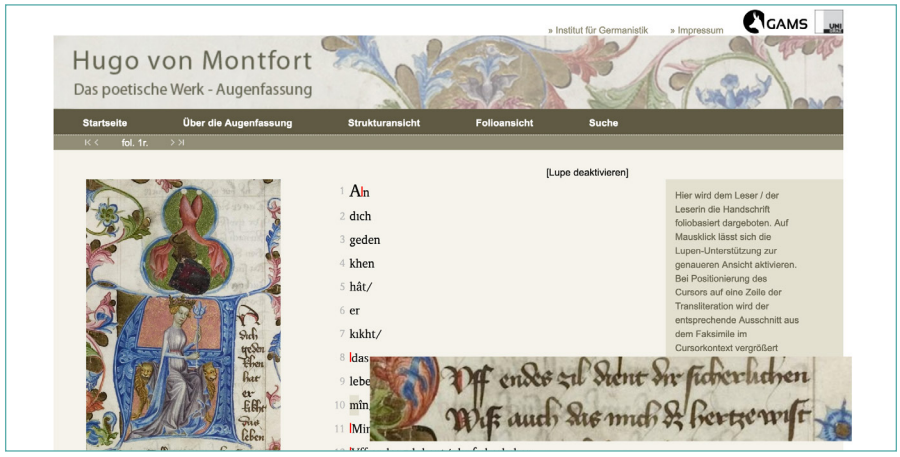


FIG. 10: Example of a text-image connection in the edition of *Hugo von Montfort*, Cod. Pal. germ. 329, f. 1r, where the synoptic view of the 'facsimile' and the 'base transliteration' allows for a mouseover effect on the text that highlights the corresponding part of the image, <http://gams.uni-graz.at/fedora/get/o:me.1r/bdef:TEI/get/> (screen capture 2 July 2020).

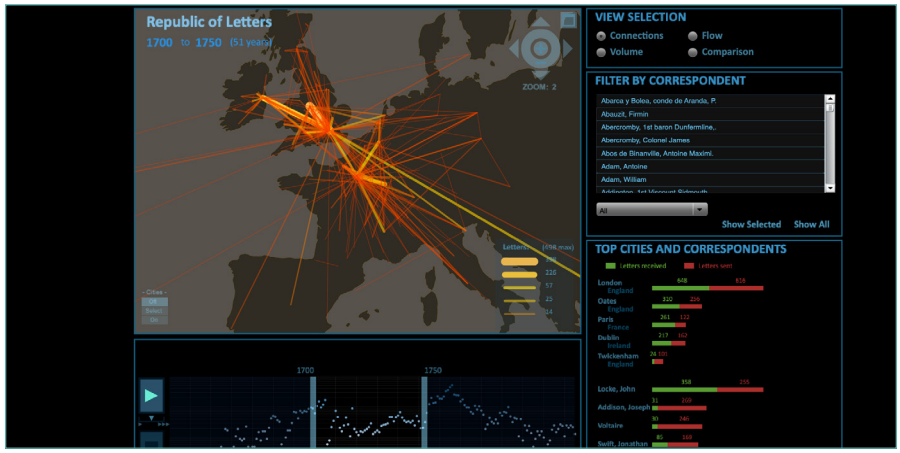


FIG. 11: RPLVIZ, the first visualization experiment for *Mapping the Republic of Letters*, built by Jeff Heer's students in CS448b, Humanities + Design Research Lab, Center for Spatial and Textual Analysis (CESTA), Stanford University, 2009, <http://stanford.edu/group/toolingup/rplviz/rplviz.swf> (screen capture 3 July 2020).

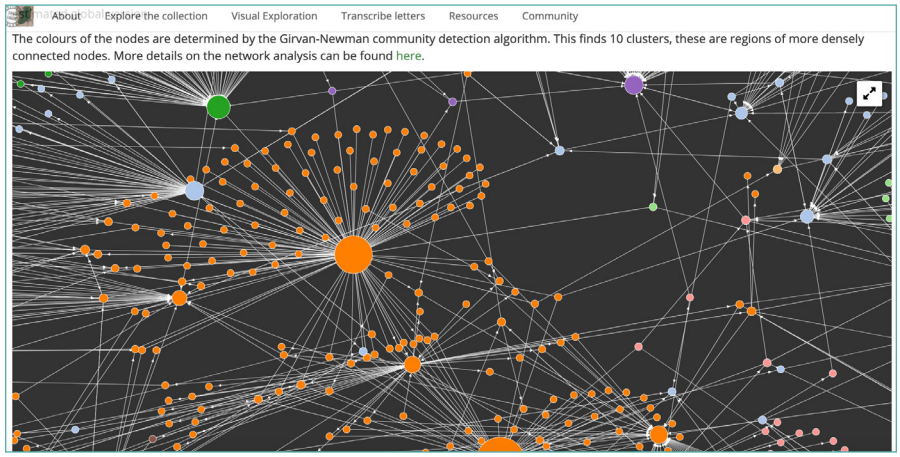


FIG. 12: A network diagram of letter writers and receivers from the *Letters of 1916–1923* project, ed. by Susan Schreibman, Maynooth University [et al.], 2013–present, <http://letters1916.maynoothuniversity.ie/vizualizations/graph> (screen capture 7 July 2020).

with the <surface> and therein the <zone> element.[31] This may take rectangular or polygonal shape.

Further efforts have been made by cultural heritage institutions that are often in possession of the material that might be used as a source for scholarly editions, such as medieval manuscripts: The *International Image Interoperability Framework* (IIIF) initiative, through the work of its consortium, has established a set of standards and API specifications that are meant to facilitate a best practice in making digital image repositories accessible, usable, and, as the name indicates, interoperable according to a linked data principle.[32] One part of this is the ability to address a specific (rectangular) region of an image, either by pixel coordinates or percentage.[33] The predecessor project of IIIF, *Shared Canvas*, advocated even more explicitly for a concept of canvases divided into zones.[34]

When it comes to the aspect of *mise-en-page*, there have been experiments with automatic layout detection in medieval manuscripts, perhaps

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31 See <https://tei-c.org/release/doc/tei-p5-doc/en/html/ref-surface.html> and <https://tei-c.org/release/doc/tei-p5-doc/en/html/ref-zone.html> (version 4.5.0; last updated 25 October 2022, revision 3e98e619e; accessed 18 February 2023).

32 See <https://iiif.io/> (accessed 20 February 2023). Of the many articles being published about the IIIF, see, for a selection, Alberto Salarelli, "International Image Interoperability Framework (IIIF): una panoramica," in: *JLIS.it* 8/1 (2017), 50–66, online: <https://doi.org/10.4403/jlis.it-12052>; Joris van Zundert, "On Not Writing a Review about Mirador: Mirador, IIIF, and the Epistemological Gains of Distributed Digital Scholarly Resources," in: *Digital Medievalist* 11/1 (2018), [1–5], online: <https://doi.org/10.16995/dm.78>; and Nuno Freire [et al.], "Cultural Heritage Metadata Aggregation Using Web Technologies: IIIF, Sitemaps and Schema.org," in: *International Journal on Digital Libraries* 21/1 (2020), 19–30, online: <https://doi.org/10.1007/s00799-018-0259-5>. Of interest may also be the use of IIIF for the comparison of images, for which a demo version exists on the French *Biblissima* portal; see *Ovide moralisé ou La Bible des poètes en images: Comparaison de deux cycles iconographiques avec IIIF et Mirador*, <https://demos.biblissima.fr/ovide-moralise/> (accessed 20 February 2023).

33 See the documentation of the IIIF Image API 3.0, ed. by Michael Appleby [et al.], <https://iiif.io/api/image/3.0/#41-region> (accessed 20 February 2023).

34 See the documentation of the Shared Canvas Data Model 1.0, ed. by Robert Sanderson and Benjamin Albritton, 14 February 2013, <https://iiif.io/model/shared-canvas/1.0/#-Zone> (accessed 20 February 2023). See also Robert Sanderson [et al.], "SharedCanvas: A Collaborative Model for Medieval Manuscript Layout Dissemination," paper presented at the *Joint Conference on Digital Libraries* (JCDL), Ottawa, Canada, 13–17 June 2011, online: <https://doi.org/10.48550/arXiv.1104.2925>.

most notably in the project *eCodicology*.[35] Feature extraction algorithms were used on a comparatively large scale, given the context, – on 170,000 pages from 440 codices[36] – to separate text from image elements, and then the data was encoded in TEI; the goal was to perform statistical analysis on the results.[37] Given the lack of any such publicized analysis, the internal findings of the project, interesting as they may be, cannot be referenced in the discussion here. They may not be immediately pertinent to digital scholarly editing either way, but the ambitions of the project showcase a materially- and moreover spatially-oriented momentum, similar to the aspirations of *distant viewing*.[38] They also align with the aforementioned shift in focus that has been classified as a 'material turn' in manuscript studies and the wider field of textual criticism and was discussed in that context by the participants of the project.[39] Transcription tools and aids like *Transkribus* that offer some provision for automatic layout detection or the *UVic Image Markup Tool* fit into a similar mould

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35 See *eCodicology*, led by Andrea Rapp, Claudine Moulin and Rainer Stotzka, Technical University of Darmstadt, Karlsruhe Institute of Technology, University of Trier, 2013–2016, <http://www.ecodicology.org/> (accessed 20 February 2023).

36 Cf. Hannah Busch and Swati Chandna, "eCodicology: The Computer and the Mediaeval Library," in: *Kodikologie und Paläographie im digitalen Zeitalter 4 – Codicology and Palaeography in the Digital Age 4* (Schriften des Instituts für Dokumentologie und Editorik; vol. 11), ed. by Hannah Busch, Franz Fischer and Patrick Sahle, Norderstedt: BoD, 2017, 3–23, here 16, online: <http://nbn-resolving.de/urn:nbn:de:hbz:38-43605>. This publication gives the most detailed account of the work performed in the course of the project, together with similar information found in Hannah Busch and Philipp Hegel, "Automatic Layout Analysis and Storage of Digitized Medieval Books," in: *Digital Philology: A Journal of Medieval Cultures* 6/2 (2017), 196–212, online: <http://doi.org/10.1353/dph.2017.0010>.

37 Cf. Michael Embach [et al.], "eCodicology – Algorithms for the Automatic Tagging of Medieval Manuscripts," in: *The Linked TEI: Text Encoding in the Web. TEI Conference and Members Meeting 2013. Book of Abstracts*, ed. by Fabio Ciotti and Arianna Ciula, Rome: Digilab Sapienza University & TEI Consortium 2013, 172–178.

38 On the topic of distant viewing, see, to start with, Taylor Arnold and Lauren Tilton, "Distant Viewing: Analyzing Large Visual Corpora," in: *Digital Scholarship in the Humanities* 34 suppl. 1 (2019), i3–i16, online: <https://doi.org/10.1093/llc/fqz013>.

39 Cf. Hannah Busch, Celia Krause and Philipp Vanscheidt, "Möglichkeiten der automatischen Manuskriptanalyse. Tagung an der Universität Trier, 24./25. Februar 2014," in: *editio* 28/1 (2014), 218–224, online: <https://doi.org/10.1515/editio-2014-014>. In their discussion of this emerging focus on materiality, they primarily refer to Per Röcken, "Was ist – aus editorischer Sicht – Materialität? Versuch einer Explikation des Ausdrucks und einer sachlichen Klärung," in: *editio* 22 (2008), 22–46, online: <https://doi.org/10.1515/9783484605046.0.22>.

(in terms of a general sentiment, not in terms of purpose, method, or state of development).[40]

Another option to keep in mind in relation to the increasing spatial dimension in digital scholarly editions, compared to printed editions, is the quite literal mapping of content onto a geographical map, ideally (in the sense of using a medium to the best of its ability) in a dynamically interactive way. Letter editions appear predestined for this purpose since they naturally – usually – feature the locations of the sender and addressee of a letter, allowing for an intuitively understood visualization that may grow complex when larger networks of communication are involved, such as in the *Mapping the Republic of Letters* project (see **FIG. 11**).[41]

As the *Letters of 1916–1923* project – which offers an interactive map, a network diagram, and statistical analysis under a section of 'visual exploration'[42] – confirms (see **FIG. 12**), many of the aspects that I have singled out so far as being very pronounced in digital scholarly editions, even if not entirely unique to them, could be subsumed under the aforementioned umbrella of *visualization*. Visualizing materiality, visualizing

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40 See <https://readcoop.eu/transkribus/> (accessed 20 February 2023). The layout analysis performed in the context of *Transkribus* focuses on the detection of regions and baselines. In the estimation of Georg Vogeler, the automatic layout detection of *Transkribus* works well in practice and requires few manual interventions, cf. Georg Vogeler, "Digitale Editionspraxis: Vom pluralistischen Textbegriff zur pluralistischen Softwarelösung," in: *Textgenese in der digitalen Edition* (editio / Beihefte; vol. 45), ed. by Anke Bosse and Walter Fanta, Berlin / Boston: De Gruyter, 2019, 117–136, here 125, online: <https://doi.org/10.1515/9783110575996-008>. See also for further literature on the topic his references ibid., fn. 41. For the *UVic Image Markup Tool*, see <https://hcmc.uvic.ca/~mholmes/image_markup/> (accessed 20 February 2023). It should be noted that the development of the *UVic Image Markup Tool* goes back to at least 2006 and that it was last updated in 2012 (cf. <https://hcmc.uvic.ca/~mholmes/image_markup/update.php>, accessed 26 February 2023); it might therefore be considered a legacy of an earlier digital humanities history.

41 See *Mapping the Republic of Letters*, Stanford University [et al.], 2008–2017, <http://republicofletters.stanford.edu/> (accessed 12 February 2023). See also, more generally, Howard Hotson and Thomas Wallnig (Eds.), *Reassembling the Republic of Letters in the Digital Age: Standards, Systems, Scholarship*, Göttingen: Göttingen University Press, 2019.

42 Cf. <https://letters1916.ie/wp-post/visual-exploration> (accessed 26 February 2023). On the project, see *Letters of 1916–1923*, ed. by Susan Schreibman, Maynooth University, 2013–present, <https://letters1916.ie/> (accessed 26 February 2023).

spatiality, making the content of source material visible in a *contextualized* form, amidst the source material from which it was drawn and the spatio-temporal world in which it was born.

C.
MULTIMEDIALIZATION

The following sections continue that theme, but first it is necessary to understand how the change in medium affects scholarly editions in their mediality. Patrick Sahle prefers to speak of *Transmedialität* ('transmediality') in this regard, by which he refers to a transmediality of 'electronic texts'.[43] According to his understanding, texts enter a transmedial state during their 'recoding' and from this, his verdict follows:

> In order to represent texts correctly with a technology that does not simply impose itself on other forms but recodes them transmedially *before* the remedialization, it is necessary to make one's own understanding of the text explicit.[44]

The transmedial state, in that view, is the state of transition, a state after a demedialization and before a remedialization – one might therefore also call it an intermedial state or even a non-medial state, although that would not carry the same transitory *beyond*-medial emphasis; beyond medial implementation, that is. The Sahlean notion of transmediality as an inevitable condition of or at least stage in the process of digital scholarly editing (supposing that it involves the digital representation of something originally non-digital) introduces an important question: What is a 'medium' in the given context?

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43 Cf. his discussion of the concept in Sahle 2013c, 113f. See also Patrick Sahle, "Zwischen Mediengebundenheit und Transmedialisierung: Anmerkungen zum Verhältnis von Edition und Medien," in: *editio* 24 (2010), 23–36, online: <https://doi.org/10.1515/9783110223163.0.23>.

44 Ibid., 113, original: "[U]m Texte in einer Technologie, die sich nicht einfach anderen Formen überstülpt, sondern sie *vor* der Remedialisierung zunächst transmedial recodiert, korrekt wiederzugeben, ist es notwendig, auch das eigene Verständnis vom Text explizit zu machen."

If a medium is any kind of *in-between* that communicates something to an observer, then a non-medial state of information cannot exist in the sense that we cannot observably know of its existence. The definition of the term by Marshall McLuhan, a pioneer of media theory, was, for example, rather loose in a similar vein.[45] If we, on the other hand, define a 'medium' in the more profane diction of, say, media theorist Friedrich Kittler, to name but one of many who have written about this, then the medium as a means of communication is more closely tied to its physical and technical means of storing information.[46]

Patrick Sahle has acknowledged that the definition of a 'medium' has a bearing on his concept of transmediality and specified that "editions are transmedial when [the term] media denotes tangible products of certain media technologies, such as a book, a CD-ROM, or an online publication."[47] He further concedes that 'media' is often used to describe overarching 'systems' "that include the products, the technical principles of production, and the underlying social and economic conditions of production [...] e.g. [...] 'the press', 'television', or 'radio'"[48] and he also

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45 See, in particular, Marshall McLuhan, *Understanding Media: The Extensions of Man*, London: Routledge & Paul, 1964.

46 Kittler's *Habilitationsschrift* illuminates his controversial and influential approach to communication and media studies that helped establish those disciplines in German academia; the evaluations and expert opinions submitted to the habilitation commission tasked with deciding whether the work carried enough scholarly merit to warrant the reward of the habilitation qualification are interesting documents of the inner-academic debate in the early 1980s. See for those Manfred Frank [et al.], "Aufschreibesysteme 1980/2010: In memoriam Friedrich Kittler (1943-2011)," in: *Zeitschrift für Medienwissenschaft* 6/1 (2012), 114–192, online: <https://doi.org/10.25969/mediarep/2681>. For the *Habilitationsschrift* itself, see Friedrich Kittler, *Aufschreibesysteme 1800/1900*, München: Fink, 1985. For an appraisal of Kittler's body of work as well as a survey of media studies in his wake, see Maria Teresa Cruz (Ed.), *Media Theory and Cultural Technologies: In Memoriam Friedrich Kittler*, Newcastle upon Tyne: Cambridge Scholars Publishing, 2017.

47 Sahle 2013b, 164, original: "Editionen sind transmedial, wenn mit Medien die konkreten Produkte bestimmter Medientechnologien gemeint sind, also etwa ein Buch, eine CD-ROM oder eine Online-Veröffentlichung."

48 Ibid., 164f., original: "Unter 'Medien' werden oft aber auch zusammenfassend mediale 'Systeme' verstanden, die dann die Produkte, die technischen Grundlagen der Produktion und die sozialen und ökonomischen Rahmenbedingungen umfassen. Medien als 'Systeme' sind z.B. gemeint, wenn von 'der Presse', 'dem Fernsehen' oder 'dem Radio' die Rede ist."

acknowledges that "one might speak of the 'medium computer' in that sense."[49] Book and computer as two different types of media?

When film scholar Anna Bohn proposes the concept of a 'multimedia edition'[50] as well as when medievalist Thomas Bein writes about the 'multimedia edition and its consequences',[51] the term again proves flexible, absorbing different colloquial uses and implicit understandings of what a medium – and therefore, something *multi*-medial – is. In Bein's case, the distinction seems to run somewhere along the lines of 'print media' or 'manuscript media' and 'digital media'[52] with a focus on the appropriate harnessing of the latter (i.e. the multimedia potential of the digital) although in more recent years, he has further deliberated on the incorporation of *performances* of literature[53] which could, for example, be achieved through a provision of audio recordings of poetry, something which was in principle and practice already possible in the world of printed editions where a physical audio record could be attached to a

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49 Ibid.

50 See Anna Bohn, "Multimediale Edition," blog post, in: *Filmeditio* (10 January 2016), online: <https://filmeditio.hypotheses.org/515> (accessed 20 February 2023); see also Anna Bohn, "Von U-Booten, Kriegsreportern und dem Fall des Hauses Romanov: Multimediale Edition. Perspektiven der Kontextualisierung digitalisierter Filmdokumente des Ersten Weltkriegs," in: *editio* 29/1 (2015), 11–28, online: <https://doi.org/10.1515/editio-2015-003>.

51 See Thomas Bein, "Die Multimedia-Edition und ihre Folgen," in: *editio* 24 (2010), 64–78, online: <https://doi.org/10.1515/9783110223163.0.64>.

52 Cf. for this juxtaposition, in reference to Hans Walter Gabler, Bein 2010, 66. See also Thomas Bein, "Leerstellen edieren? Überlegungen zur Einbindung von Performanz in Editionen mittelalterlicher Literatur," in: *editio* 32/1 (2018), 82–92, online: <https://doi.org/10.1515/editio-2018-0006>, and here specifically the following paragraph, ibid., 85: "From the dawn of scholarly text editing (Brothers Grimm, Lachmann, and successors) until well into the 20th century, texts from manuscripts have been edited as texts. The medium has, here and there, almost been the same: Parchment there, paper here. Characters there, characters here." (Original: "Seit den Anfängen der wissenschaftlichen Textedition (Brüder Grimm, Lachmann und Nachfolger) bis weit in das 20. Jahrhundert hinein werden die handschriftlich überlieferten Texte *als Texte* ediert. Das Medium ist hier wie dort fast gleich: Pergament dort, Papier hier. Schriftzeichen dort, Schriftzeichen hier.")

53 See Bein 2018. On the topic of performance in its relation to editorial concerns, see also Thomas Betzwieser and Markus Schneider (Eds.), *Aufführung und Edition* (editio / Beihefte; vol. 46), Berlin / Boston: De Gruyter, 2019.

book.[54] Bohn's understanding of 'multimedia' is similar in that it would seem to mean a combination of sound, text, image, and film on a shared technological platform.[55]

While this definition of a multimedia edition is intuitively plausible, it is worth noting that so-called 'hybrid' editions exist – editions published both in a digital, usually web-based, form and in a printed book form.[56] Those types of editions were, in fact, more common than strictly 'electronic' editions from the late 1980s until at least the early 2000s.[57] Why would we not call those kinds of editions multimedia editions? Is it because they treat the digital and the printed medium (if we go by that definition) as separate entities, wherefore their content must be duplicated in the other to the extent that that is possible in order to satisfy different user groups?[58] Is it because both represent text, even if stored

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54 See, for sample projects and cooperations to that end, Bein 2018, 87. He questions whether the mere addition of an "*auditive* medium" (ibid.) is sufficient and then argues that differently interpretative (live) performances could provide some insights into textual and literary source material as well as offer a possibility of reconstructing lacunae through, presumably, conjecture based on the performances (cf. Bein 2018, 90f.).
55 Cf. Bohn 2016.
56 Examples for such editions include *Theodor Fontane: Notizbücher. Digitale genetisch-kritische und kommentierte Edition*, ed. by Gabriele Radecke, <https://fontane-nb.dariah.eu/index.html> (accessed 20 February 2023), *Ernst Toller: Digitale Briefedition*, ed. by Stefan Neuhaus [et al.], <http://www.tolleredition.de/> (accessed 20 February 2023), and the *Hannah Arendt: Kritische Gesamtausgabe*, ed. by Anne Eusterschulte [et al.], <https://hannah-arendt-edition.net/> (accessed 20 February 2023). For an earlier example that progressed from a book publication to include a digital version, see *Vincent van Gogh: The Letters*, ed. by Leo Jansen, Hans Luijten and Nienke Bakker, <http://vangoghletters.org/vg/> (accessed 20 February 2023). For an appraisal of this type of edition, see Stephanie P. Browner and Kenneth M. Price, "Charles Chesnutt and the Case for Hybrid Editing," in: *International Journal of Digital Humanities* 1 (2019), 165–178, online: <https://doi.org/10.1007/s42803-019-00015-7>.
57 At the time still overwhelmingly disk-based, cf. Jörg Hörnschemeyer, *Textgenetische Prozesse in Digitalen Editionen*, doctoral dissertation, University of Cologne, 2017, 28–30, online: <http://nbn-resolving.de/urn:nbn:de:hbz:38-75446>.
58 Dirk van Hulle, in referring to the hybrid nature of the *Beckett Digital Manuscript Project* (BDMP), <https://www.beckettarchive.org/> (accessed 20 February 2023), has described it as following 'a rationale of reversible roles' but the fact remains that the beneficial – as postulated – and even reciprocal relationship between the 'digital edition' and the 'printed monograph' is neither portrayed as either of them aiming at the same target group nor portrayed as being in itself indispensable, cf. Dirk van Hulle, "Modelling a Digital Scholarly Edition for Genetic Criticism: A Rapprochement," in: *Variants* 12–13 (2016), 34–56, online: <https://doi.org/10.4000/variants.293>.

differently in technological terms, or perhaps even images, as may have already happened in printed editions featuring one or two pictures of a manuscript,[59] but not a third or fourth dimension of 'mediality' in the sense of Bein or Bohn? Is it because the digital 'medium' is inherently seen to be 'multimedial' as opposed to a supposedly 'monomedial' printed 'medium'?

It would be possible to launch into a lengthy media-theoretical discussion at this point but it is doubtful that that would produce relevant findings for the purpose of this book. Posing these questions is merely a reminder that there are different ways to think about these issues, beyond terminology. It is, for example, not at all inconceivable that there could be an edition that would be part digital, part printed; an edition where those parts could not be viewed or used separately from each other (with negligible allowances of one being more comprehensive or 'searchable' or decorated with images); an edition where those parts would be inalienably *dependent* on each other, with information flowing both ways and combining to form the edition, not just in a complementary way but in a way that is interwoven. It is, moreover, conceivable that this could be expanded to other 'tangible products of media technologies' and that this cross-pollination could be thought of as a type of multimediality; a multimedial existence of the edition in its infrastructural conditionality, not necessarily in what it represents.

This might not come to pass so long as the printed part of a hybrid edition is seen as the 'reliable' part that may be reviewed and quoted in academia while the digital part is treated as a playful extension of or extended data basis for the printed edition that one might peruse at their own discretion; should those be prevalent sentiments.[60] In

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59 Or a series of facsimile images opposite the traditionally edited text, such as in the aforementioned Fleming 1999.

60 The reasoning given for designing the digital edition of Hanna Arendt's work as a hybrid edition is quite explicitly such a sentiment: "Critical readings such as academic studies that gain access to the entirety of the text for the first time will continue to originate from the medium book in the future. For printed editions are not just the most reliable and sustainable medium for the transmission of text, even in the digital age, they furthermore [...] function [...] as an indispensable material instrument of research." (<https://hannah-arendt-edition.net/content_md.html?id=docs/hybrid_edition.md> (accessed 23 February 2023); original: "Kritische Lektüren wie wissenschaftliche Studien, die nun

such a scenario, a multimedia edition as sketched above would negate the perceived advantages of a printed part in a hybrid edition without addressing reservations about its digital counterpart, possibly (and in that case reasonably) rooted in past experiences of instability and lack of long-term preservation.[61]

Since this is hypothetical and again irrelevant for the present inquiry, insofar as it is concerned with *digital* scholarly editions and not hybrid forms of edition, the most important insight that can be gained from these considerations is that there may be at least two dimensions of multimediality that need to be considered in the *modelling* of scholarly editions: the dimension of carrier materials or information carriers and how those interact with each other, and the dimension of 'types' of information formerly extant on separate carriers (paper, film reels, photo paper, audio cassettes) but through digitization and a subsequent transformation of information united in one space, therefore necessitating the question how they relate to each other in that space rather than across spaces, making it a matter of intersecting representation.

Something that should not remain unsaid, furthermore, is that the depth of representation tends to be (over-)emphasized in discussions of digital editions where it is used as a measure of contrast and argument for superiority over printed editions.[62] Much is made of the enrichment through mark-up and the explicitness or implicitness of information;

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erstmals Zugriff auf den Gesamttext erhalten, werden auch in Zukunft vom Medium Buch ausgehen. Denn gedruckte Ausgaben sind selbst im digitalen Zeitalter nicht nur das beständigste und nachhaltigste Medium der Textübermittlung, sondern [...] fungieren [...] als unverzichtbares materiales Forschungsinstrument.")

61 On the related note of a perpetual 'unfinishedness' and thus 'unquotability' of digital editions, I discussed what I termed the 'beta dilemma' at length in Tessa Gengnagel, "The 'Beta Dilemma' – A Review of the Faust Edition," in: *RIDE* 7 (2017), online: <https://doi.org/10.18716/ride.a.7.3>.

62 This can be sensed in the following statement: "Traditional critical editing, defined by the paper and print limitations of the codex format, is now considered by many to be inadequate for the expression and interpretation of complex, multi-layered or multi-text works of the human imagination." (Cf. Marilyn Deegan and Kathryn Sutherland (Eds.), *Text Editing, Print and the Digital World*, Farnham: Ashgate, 2009, 'Introduction', 1–10, here 1.) Another example for this kind of thinking is evident in the famous dictum 'print is flat, code is deep' that was coined by Katherine Hayles; see N. Katherine Hayles, "Print Is Flat, Code Is Deep: The Importance of Media-Specific Analysis," in: *Poetics Today* 25/1 (2004), 67–90.

but digital editions flatten the tactile experience of a material and the sensory experience of the information gleaned from it in a way that is not at all dissimilar to printed editions.[63] An argument can be made that the increased potential for *interaction* with and *manipulation* of a digital representation changes the consumption of information from a more passive to a more active state when compared to reading a book, but at the end of the day, and spoken in generalized terms, the page in a book and the screen of a computer are both flat surfaces, hence the inevitable emphasis on the *visibility* and visualization of information. The aspect of *audibility* is, as Bein has pointed out, still underutilized in the context of digital scholarly editions, despite some efforts in that regard.[64] IIIF

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63 Art historian Michael Camille wrote an interesting article about this topic in 1998, parts of which read prescient today and other parts of which document an apprehension similar to the one sketched above under the section about (re-)materialization, pertaining to a sense of dematerialization and disembodiment. Referring to the use of computer screens as viewpoints on digitized manuscripts specifically, Camille noted: "True, this site/sight is vastly more multiform than any page and can be constantly played around with by myself and anyone else who cares to join in. But it is always absent, and, moreover, it can be everywhere at once." (Michael Camille, "Sensations of the Page: Imaging Technologies and Medieval Illuminated Manuscripts," in: *The Iconic Page in Manuscript, Print, and Digital Culture*, ed. by George Bornstein and Theresa Lynn Tinkle, Ann Arbor: University of Michigan Press, 1998, 33–54, here 46.)

64 Cf. Bein 2018, 87. He refers to philological medievalist German studies and their cooperation with the study of music history specifically, rather than making a sweeping statement about digital scholarly editions in general. On the underdeveloped current state of 'audio editions' (i.e. editions of auditive materials such as radio plays), see the conference report Sophia Victoria Krebs, "Kritische Audio-Edition: Interdisziplinäre Fachtagung an der Bergischen Universität Wuppertal, 12.–14. Juli 2018," in: *editio* 32/1 (2018), 220–223, online: <https://doi.org/10.1515/editio-2018-0020>. The lack of audible elements sometimes applies, curiously enough, to the edition of music works as well; see, for example, the digital edition of the correspondence, diaries, and works of composer Carl Maria von Weber in the *Carl-Maria-von-Weber-Gesamtausgabe* (WeGA), ed. by Gerhard Allroggen [et al.], Akademie der Wissenschaften und der Literatur Mainz, 2011–present, <https://weber-gesamtausgabe.de/> (accessed 20 February 2023), which does not incorporate audio files (the funding for creating such recordings as well as the copyright situation with regard to existing recordings has to be taken into account, of course). It should be noted that the *Music Encoding Initiative* (MEI) markup standard does have dedicated elements for the inclusion of performances in the form of audio or video recordings (see <https://music-encoding.org/guidelines/v4/content/facsimilesrecordings.html> (accessed 20 February 2023). In cases where legal issues or similar practical concerns do not exist because the recorded material itself is of scholarly interest and was created by and subsequently shared by scholars, such auditive materials have been provided in the form of a scholarly curated archive, such as in the *Oral Tales of Mongolian Bards* project, ed. by Walther Heissig, Bonn University, University of

added support for the presentation and annotation of audio-visual materials or 'time-based media' with version 3.0 in 2020 which may yet prove to be a significant step with an eye towards the future of digital scholarly editions.[65]

When one considers digital scholarly editions in that future, navigating issues of mediality may not be at the forefront but it will be at the base of activities and, more importantly, it will be at the base of modelling concerns since it directly impacts what is being modelled and what it is being modelled for. Rüdiger Nutt-Kofoth has written about it as a mélange of 'plurimediality, intermediality, [and] transmediality'[66] and it would seem that developing a clear vocabulary to address practical implications in an editorial context must be a desideratum going forward. We will return to some aspects of this discussion in **CHAPTER VI**. For now, it should suffice to state that the question of *multimediality* – of the edition itself and of the contents it represents – has featured in the

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Cologne, 2012–2020, <https://mongoltales.awk.nrw.de/> (accessed 20 February 2023). Outside of a stricter context of scholarly editions, there have also been digital humanities projects like the *Virtual St Paul's Cathedral Project* which "provides the experience of hearing John Donne's sermon for Gunpowder Day, November 5th, 1622 in Paul's Churchyard, the specific physical location for which it was composed," cf. *Virtual Paul's Cross Project*, led by John N. Wall, NC State University, 2011–2021, <https://vpcross.chass.ncsu.edu/> (accessed 20 February 2023). And then, of course, once one moves away from the digital humanities or otherwise towards virtual reality applications with a cultural or historical component, or websites with otherwise audio-visual materials, examples for those abound.

65 Cf. <https://iiif.io/news/2020/06/04/IIIF-C-Announces-Final-Release-of-3.0-Specifications/> (accessed 20 February 2023): "A critical element of this release is the ability to move beyond static digital images to present and annotate audio and moving images. This is done by adding duration to the existing IIIF canvas model, which also features x and y coordinates as means of selecting and annotating regions. Now, images and video can be juxtaposed using open source software viewers — allowing the public to view time-based media in open source media players, and allowing researchers to use open assets to create new tools and works including critical editions, annotated oral histories, musical works with thematic markup, and more."

66 Rüdiger Nutt-Kofoth, "Plurimedialität, Intermedialität, Transmedialität: Theoretische, methodische und praktische Implikationen einer Text-Ton-Film-Edition von Alfred Döblins Berlin-Alexanderplatz-Werkkomplex (1929–1931)," in: *Aufführung und Edition* (editio / Beihefte; vol. 46), ed. by Thomas Betzwieser and Markus Schneider, Berlin / Boston: De Gruyter, 2019, 183–194, online: <https://doi.org/10.1515/9783110639261-015>.

discourse about digital scholarly editing in a way that it did not before with printed editions, for all the reasons outlined.

D.
DIFFERENTIATION

Another aspect that noticeably distinguishes digital scholarly editions from printed editions – or the conversation surrounding either – is the aspect of differentiation. This is an interesting aspect that has little bearing on the edition of non-textual works *specifically* and I will therefore not devote much space to it here. In fact, we can abbreviate it thusly: What is meant by differentiation is the explicit *delineation* of entities, the *naming* of entities, the *categorization* and *classification* of entities; in short, everything discussed in relation to ontologies, taxonomies, and the like.[67] This topic inevitably involves the discussion of metadata and might be said to be influenced by considerations from library and information science in that regard.[68] Take FRBR, for example, the

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67 In addition to aforementioned literature, see on this topic, since it pertains to the subject of this book, Richard Gartner, "Towards an Ontology-Based Iconography," in: *Digital Scholarship in the Humanities* 35/1 (2020), 43–53, online: <https://doi.org/10.1093/llc/fqz009>. With regard to graph-based image databases that make use of ontologies to register image contents (as well as of classifications such as Iconclass), see, as an example, *REALonline* by the Institut für Realienkunde des Mittelalters und der frühen Neuzeit in Krems, University of Salzburg, relaunched in 2019, <https://realonline.imareal.sbg.ac.at/> (accessed 20 February 2023), and Ingrid Matschinegg [et al.], *Daten neu verknoten: Die Verwendung einer Graphdatenbank für die Bilddatenbank REALonline* (DARIAH-DE Working Papers; vol. 31), Göttingen: Dokumenten- und Publikationsserver der Georg-August-Universität, 2019, online: <http://nbn-resolving.org/urn:nbn:de:gbv:7-dariah-2019-3-5>.

68 In the case of film studies, see Anna Bohn, *Film-Metadaten: Standards der Erschließung von Filmen mit RDA und FRBR im internationalen Vergleich und Perspektiven des Datenaustauschs* (Berliner Handreichungen zur Bibliotheks- und Informationswissenschaft; vol. 431), Berlin: Institut für Bibliotheks- und Informationswissenschaft der Humboldt-Universität zu Berlin, 2018. In a context of digital art history and the use of metadata in museums, see Murtha Baca (Ed.), *Introduction to Metadata*, Los Angeles: Getty Publications, ^{3}2016, online: <http://www.getty.edu/publications/intrometadata/> (accessed 20 February 2023) [originally published in 1998], and Murtha Baca, Anne Helmreich and Melissa Gill, "Digital Art History," in: *Visual Resources* 35/1-2 (2019), 1–5. See also Johanna Drucker [et al.], "Digital Art History: The American Scene," in: *Perspective: Actualité en histoire de l'art* 2 (2015), [1–16], online: <https://doi.org/10.4000/perspective.6021>, and Jorge Sebastián Lozano, "Digital

Functional Requirements for Bibliographic Records standard: At its most fundamental level, it distinguishes between work, expression, manifestation, and item, in that order of abstract notion to concrete physical object;[69] and that would, at first glance, appear to be self-explanatory and easily applied – Goethe's *Faust* (1808) is a work, Bayard Taylor's English translation (1870–1871) is an expression of that work,[70] the third edition of that translation published by Ward, Lock & Co. in 1890 and cited in **CHAPTER II** is a manifestation of that expression, and a singular physical copy of that print run is an item. As has been pointed out over the years, however, that bibliographic approach to cataloguing books struggles to account for works of art not typically found in libraries, e.g. works of fine arts and architectural works most definitely not found in libraries,[71] works from other times, such as medieval times, where there was a different and not necessarily author-bound work conception as we discussed at length in **CHAPTER I**,[72] and where there was, furthermore, no distinction between a manifestation of a work expression and an item thereof, given that manuscripts are always unique objects, not only in their physicality but in their *Ausführung* ('realisation') – the list could go on. In debating these issues, one could be reminded of Robert Scholes' summation of John Unsworth's well-known and aforementioned article "What is Humanities Computing and What is Not?" (2002) wherein Scholes states:

Art History at the Crossroads," in: *kunsttexte.de* 4 (2017), [1–14], online: <https://doi.org/10.18452/18695>.

69 On FRBR in general, see Richard P. Smiraglia, Pat Riva and Maja Žumer (Eds.), *The FRBR Family of Conceptual Models: Toward a Linked Bibliographic Future*, London / New York: Routledge, 2013.

70 On the topic of which, see, merely as an aside in case of interest, John T. Krumpelmann, "The Genesis of Bayard Taylor's Translation of Goethe's 'Faust'," in: *The Journal of English and Germanic Philology* 42/4 (1943), 551–562.

71 Cf. Heidrun Wiesenmüller, "Sacherschließung unter FRBR und RDA in Theorie und Praxis," in: *O-Bib: Das offene Bibliotheksjournal* 3/3 (2016), 24–53, here 49f., online: <https://doi.org/10.5282/o-bib/2016H3S24-53>.

72 See in the context of FRBR and its lack of suitedness for older materials also the remarks by Patrick le Boeuf from the *Bibliothèque nationale de France*, cf. Patrick le Boeuf, "Musical Works in the FRBR Model or 'Quasi la Stessa Cosa': Variations on a Theme by Umberto Eco," in: *Functional Requirements for Bibliographic Records (FRBR): Hype or Cure-All?*, ed. by Patrick le Boeuf, London / New York: Routledge, 2005, 103–124, here 115.

> Just putting a library shelf on the web is not humanities computing. Making a selection from that shelf and decisions about how to represent that selection, how to frame it, and how to allow access to it and search it takes one into the area Unsworth would call humanities computing, because these decisions can be right or wrong, good or bad.[73]

Can they be, however – right or wrong? Any decision can be good or bad, depending on the respective point of view, and some decisions can be right or wrong, if viewed from a vantage point of morality – and some information can be wrong, insofar as we deem it nonfactual, e.g. if I were to state that Johann Wolfgang von Goethe wrote his *Faust* in 1125 BC –, but there is something else at work here, something that I would rather describe with a need for 'ontological commitment'.[74] The issue is not so much that we never had to describe anything before, it is the level of differentiation between information either required or for some reason thought to be required in a digital environment. Perhaps this would not matter if no one ever learned how we classified things; whether we called them 'works' or 'expressions' or any number of names. If there is an anxiety in connection with the differentiation of explicit statements about something, then it would seem that that anxiety is rooted in a knowledge or fear that others may notice how we have classified something – if no one did, what would be the harm? If there is a sense of ontological commitment and subsequently a fear of ontological commitment, then it is possibly a social concern more than anything else, insofar as any statement about a subject of study, as well as any differentiation among those statements, might lead to a need for explanation. Note that this sense of ontological commitment should not be confused with ontological *coherence*, either across a single project

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73 Robert Scholes and Clifford Wulfman, "Humanities Computing and Digital Humanities," in: *South Atlantic Review* 73/4 (2008), 50–66, here 59 [the article is divided into two parts with clear author attribution, hence this quote being from Robert Scholes specifically].

74 'Ontological commitment' is not intended to invoke Quine's definition of the phrase here, although philosophers in the digital humanities might want to discuss it with such literature in mind; cf. on that general topic Smith 2014.

or several projects.[75] As the situation presents itself, differentiation in digital scholarly editions occurs by stating that this is this and not that; but that does not mean that this will always be this or that that would be declared that by everyone.

E.
CONNECTION

And thus, we find ourselves with the second to last section in our own differentiation, namely the differentiation among the aspects that would seem to be particularly noteworthy about digital scholarly editions when compared to printed editions. As the title of this section indicates, it pertains to the most well-known part of 'the digital' – interconnectivity, hypertexuality, linking, referencing.[76] This point actually illumines one of the reasons why differentiation of entities is seen to be of more importance or in any case practiced more stringently in digital environments: Only where there is a clear delineation of entities can those entities be related to each other; and only by relating entities to each other may we benefit from the structure of the *web* which carries its intent in its name. It should not come as a surprise that digital humanities proponents have

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75 Or else the TEI would not have to point out in their guidelines that 'tag abuse' is an undesirable practice, cf. <https://www.tei-c.org/release/doc/tei-p5-doc/en/html/AB.html> (accessed 20 February 2023).

76 One might merely consider the word internet – inter-*net* – or the nomenclature of the world wide *web* here; literature on the topic is, of course, vast. It might be prudent to remember the history of the internet and its roots in military operations and that doing something digitally or computationally is not the same as doing it web-based; however, in practice, for many if not most digital humanities projects, terms such as 'digital' will be used to refer to exactly that, to something that is web-based and through that communicative. On the topic of the history of the internet, see, as a selection, Janet Abbate, *Inventing the Internet*, Cambridge, Massachusetts / London: MIT Press, 1999; Stephen Lukasik, "Why the Arpanet was Built," in: *IEEE Annals of the History of Computing* 33/3 (2011), 4–21; Martin Schmitt, *Internet im Kalten Krieg: Eine Vorgeschichte des globalen Kommunikationsnetzes*, Bielefeld: transcript, 2016; and Camille Paloque-Bergès and Valérie Schafer, "Arpanet (1969–2019)," in: *Internet Histories: Digital Technology, Culture and Society* 3/1 (2019), 1–14, online: <https://doi.org/10.1080/24701475.2018.1560921>.

been vocal in their support of the 'Semantic Web',[77] Linked Open Data (LOD),[78] and encoding standards such as the Resource Description Framework (RDF) which presents a graph-based type of relating resources to each other, subject – predicate – object, a principle of semantic triples.[79] Georg Vogeler's advancement of the idea of graph-based 'assertive editions' is but one way we see this idea enter discourses in digital scholarly editing.[80] Whether linking data from a project to classification systems like *Iconclass* or authority files like the GND or controlled vocabularies, internal resources, external resources, the idea remains the same: to build a network of contextualized information.[81] One project that might be seen as the epitome of this is *The Codex* which fully utilizes stand-off properties to decentralize annotations.[82] As with any and all digital projects, it remains to be seen what the longevity of the approach

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77 See e.g. Eero Hyvönen, "Using the Semantic Web in Digital Humanities: Shift from Data Publishing to Data-Analysis and Serendipitous Knowledge Discovery," in: *Semantic Web* 11/1 (2020), 187–193, online: <https://doi.org/10.3233/SW-190386>.

78 See e.g. Philipp Cimiano [et al.], "Linguistic Linked Data in Digital Humanities," in: id., *Linguistic Linked Data*, Cham: Springer, 2020, 229–262, online: <https://doi.org/10.1007/978-3-030-30225-2_13>. See also Patrick Danowski and Adrian Pohl (Eds.), *(Open) Linked Data in Bibliotheken*, Berlin / Boston: De Gruyter, 2013.

79 On the use of RDF in digital humanities contexts, see, in addition to the other literature about linked data and the semantic web, e.g. Valentina Bartalesi [et al.], "DanteSources: A Digital Library for Studying Dante Alighieri's Primary Sources," in: *Umanistica Digitale* 1/1 (2017), 119–128, online: <https://doi.org/10.6092/issn.2532-8816/7250>.

80 See Georg Vogeler, "'Standing-off Trees and Graphs': On the Affordance of Technologies for the Assertive Edition," in: *Graph Data-Models and Semantic Web Technologies in Scholarly Digital Editing* (Schriften des Instituts für Dokumentologie und Editorik; vol. 15), ed. by Elena Spadini, Francesca Tomasi and Georg Vogeler, Norderstedt: Books on Demand, 2021, 73–94.

81 On the general topic of which (not specific to the *Gemeinsame Normdatei*, GND, by the German National Library which is just one such example, another one being the *Virtual International Authority File*, VIAF), see Felix Bensmann, Benjamin Zapilko and Philipp Mayr, "Interlinking Large-Scale Library Data with Authority Records," in: *Frontiers in Digital Humanities* 4 (2017), online: <https://doi.org/10.3389/fdigh.2017.00005>, which also touches on RDF and LOD, of course, since all of these topics are related.

82 Cf. Iian Neill and Andreas Kuczera, "The Codex: An Atlas of Relations," in: *Die Modellierung des Zweifels: Schlüsselideen und -konzepte zur graphbasierten Modellierung von Unsicherheiten* (Zeitschrift für digitale Geisteswissenschaften; special issue 4), ed. by Andreas Kuczera, Thorsten Wübbena and Thomas Kollatz, Wolfenbüttel, 2019, online: <https://doi.org/10.17175/sb004_008>.

will be. This, too, naturally colours any and all thinking about digital scholarly editions and more specifically the modelling of scholarly editions. If we leave the issue of a reliable and stable way of referencing an edition aside – and it is an important issue to leave aside, not least of all because expiration phenomena like 'orphaned editions' are quite unique to digital scholarly editions as well[83] –, then we can still sense some of the issues that might arise if interconnectivity were to become the main focus of a digital scholarly edition. The first question would be: What are we connecting? More specifically: What are we connecting beyond that which was already implicitly connected in a printed scholarly edition? (Since traditional scholarly editions heavily rely on reference systems of their own, collating not only witnesses but sourcing intertextuality, e.g. quotes and paraphrases of preceding authors as well as quotes and paraphrases of the edited passage in later writings by others.) 'The digital' can afford to make these connections more explicit – granted that there is an external resource from which the referenced text or biographical and geographical information can be retrieved or with which it can be linked. Everything else then becomes a question of standards, APIs, and protocols. Within standards, however, always lies a restriction to the commonly agreed. And within the explicitness of the information generally connected in such a way lies a mundane quality; certainly not trivial but rarely more than a courtesy from the editor to the reader in traditional scholarship, vis-à-vis the identification and disambiguation of entities and the provision of context in a *Sachkommentar*, the identification of references to older works in a *Similienapparat* and the identification of references to the edited text in later works in a *Testimonienapparat*, to name examples from one tradition of editing. Weaving that web more

83 In this context, see also the nascent discussion of the FAIR principles and how digital scholarly editions may adhere to them, which is obviously relevant to any question of interoperability; cf. Tessa Gengnagel, Frederike Neuber and Daniela Schulz, "Criteria for Reviewing the Application of FAIR Principles in Digital Scholarly Editions," version 1.1, in: *RIDE* (2022), online: <https://ride.i-d-e.de/fair-criteria-editions/> (accessed 27 February 2023), and Tessa Gengnagel, Frederike Neuber and Daniela Schulz, "FAIR Enough? Evaluating Digital Scholarly Editions and the Application of the FAIR Data Principles," editorial, in: *RIDE* 16 (2023), online: <https://doi.org/10.18716/ride.a.16.0>.

fully and immediately accessible serves its purposes beyond convenience, namely a broader view on spheres of intellectual influence, and it may, over time, shift how we gauge the value and quality of an edition. Yet if we apply current standards of scholarship, other matters come to the fore, in terms of presentation, representability, functionality, and usability; and they are tied to the quality of commentary, the quality of reconstructive work, the quality of collation and emendation, the quality of navigation. It is, in fact, the relation of these latter qualities – which may be said to be common to scholarly editions of all materials and to scholarly editions *in* all media, insofar as such a state can be envisioned at the present moment – to those aspects of digital scholarly editing – which may not be unique to it but are nevertheless rather specific to it – that must be the basis of conceptual modelling concerns in this context as well as a guideline of evaluation for the resulting implementation, viz. a digital *and* scholarly edition.

F.
INTERFACING

I would like to conclude this brief chapter on some of the distinctive transformations that scholarly editions are going through with an aspect that is rather important as well: the appearance of the edition. Or, if we mind the term 'interface' and consider the previous section: the access point of an edition. Not for data exchange but for human use. As Hans Walter Gabler has rightly pointed out:

> A significant reason for the survival of editorial thinking and procedure from the age of material print may be the persistent focus on the production side, on the making of editions. The user interface of digital editions has as yet been too little attended to. This may ultimately be a result of the strong autocratic strain traditionally ingrained in the editorial enterprise. That strain effectively bars imagining the edition's user as the editor's partner and peer and

> makes for a lack of incentive to provide for the user's participation in, and interaction with the edition.[84]

One could think of this as yet another matter of visualization but as with printed editions, we do not tend to think of usability in those visual terms; not least of all since editors rarely had to reimagine what a book 'interface' could or should look like at its most basic level, guided as they were by existing conventions of typesetting. The question of interfaces in digital scholarly editing has received more attention in recent years.[85] One cannot claim, however, that this has conventionalized practices of web design in accordance with the specific needs of scholarly editions or, indeed, their potentialities. Editions created with toolboxes like the *TEI Publisher* or *EVT* may be closest to qualifying in that regard,[86] depending on their level of customization, because they are published within or rather on the basis of an underlying framework, generating a degree of recognizability otherwise absent from digital scholarly editions. The use of templates and existing components is especially commendable with an eye towards the sustainability and maintenance of a digital edition; even so, it arises from a consensus that may not necessarily be rooted in the kind of vision that Hans Walter Gabler indicates – the vision of editions as participatory experiences.

This is significant because funding for editorial projects does not (in the German context, generally speaking) include expenses for personnel solely concerned with the appearance of the edition. If such an edition is created in collaboration with an institution that provides digital humanities expertise and backs individual project members with a larger team,

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84 Hans Walter Gabler, "Theorizing the Digital Scholarly Edition," in: *Literature Compass* 7/2 (2010), 43–56, here 48, online: <https://doi.org/10.1111/j.1741-4113.2009.00675.x>.

85 See Roman Bleier [et al.] (Eds.), *Digital Scholarly Editions as Interfaces* (Schriften des Instituts für Dokumentologie und Editorik; vol. 12), Norderstedt: Books on Demand, 2018.

86 See *TEI Publisher*, led by e-editiones, 2015–present, <https://teipublisher.com/> (accessed 28 February 2023), and *EVT – Edition Visualization Technology*, led by Roberto Rosselli Del Turco, University of Pisa, 2013–present, <http://evt.labcd.unipi.it/> (accessed 28 February 2023). The alpha of EVT 3 was released 8 December 2022, cf. <https://visualizationtechnology.wordpress.com/2022/12/08/evt-3-alpha-available-for-download-and-testing/> (accessed 28 February 2023).

such tasks may be covered under that umbrella or fall to employees who happen to possess that particular skill set in addition to the required knowledge of database management, software development, text encoding, etc. The need for and usefulness of the TEI Publisher and similar single-source publishing pipelines clearly demonstrate that remarkable individually realized digital editions are lucky coincidences, born out of the necessity of practice and the privilege of supplying an editorial project with more resources than were likely granted for its execution and completion. Out of the box solutions also serve to reduce redundance. That is helpful; it enables the successful creation of more editions with fewer resources; or the investment of those resources in other areas of the editorial work (although, as noted, few resources are reserved for the appearance of the different publication formats to begin with). Therein also lies the issue. Designing an edition should not be viewed as the part that can be rationed away. The supremacy of the data-driven approach does not, *pace* Stäcker, ensure longevity. The longevity of resources is generally ensured by a social contract, namely a community of users and a group of hosts (even if only of the most simple imaginable repository) willing to care – to answer requests, to update servers, to migrate data. A data dump that no one looks at is as dead as a printed edition that no one reads, although one supposes that both could be dusted off in due time. The different components of a digital scholarly edition and their 'storability' naturally figure into any conversation about the essence of an edition, of that which remains after everything is said and done, but the focus on data also obscures an extremely important modelling concern which would appear to be self-evident: We do not only model the data. We model the experience. We model the appearance. These, too, consist of parts and sequences of order. And they, too, may be inextricably linked with the essence of an edition, especially if we move past textual mark-up as the alleged primary value of the (digital) scholarly edition. These other editorial components need to be documented and reasoned about as well. And it needs to be a task of any project design to consider the sustainability of any given approach – to clarify which parts of the edition need to be referenceable in a stable way and which parts may be or even should be ephemeral, malleable, or revivable.

In the investigation of the following chapters, we will focus on the variance of (audio-)visual works since the demands they make of us are the next step: From the text that we edit traditionally, as found in medieval manuscripts, for example, to other units of meaning contained in those very same manuscripts. The distinct qualities of digital scholarly editions would seem to lend themselves to thinking about *everything other than* text with its reproductive digital as well as pre-digital history; even more so: everything *visual*. It would appear to me that there is no sense in discussing, at this stage, what an interface of a digital scholarly edition should contain or what it might look like – first, we need to expand our understanding of what is that we edit or could edit, were we to consider the media of that which we edit as much as the media in which we edit it. That marks the beginning of our modelling process. Nevertheless, there are a few aspects that I would like to mention before we can proceed to do so; other aspects that point towards a future of digital scholarly editing more so than its present, principally not regardless of that which we edit but regardless – to some degree – of the medial quality of that which we edit.

I am referring, in part, to social, political, and ethical concerns. The ease with which to publish something digitally rather than in print must be acknowledged, even though we cannot discriminate between the offences of printed and digital scholarly editions in this way; the 'scholarly' part of any such edition should prevent actions that lack reflection, or so one would hope. Since digital scholarly editions may refer to external digital or digitized resources, however, they need to be cognizant of circumstances of creation that reside outside their own remit. Discourses about the digitization of 'source materials' are dominated by Anglophone and Eurocentric voices in the digital humanities, and we should be mindful that to regard these materials as source materials is only one way of viewing our interaction with them. As Yirga Gelaw Woldeyes described in his review of a printed scholarly edition of *The Hagiography of Ethiopian Saint Woletta Petros* by Wendy Belcher and Michael Kleiner which contains an English translation of the Ge'ez and was also accompanied by an online presentation of a manuscript witness:

> Most rural and all monastic people in Ethiopia believe that Ge'ez texts like The Hagiography of Woletta Petros are sacred, alive and powerful. They are placed in a church and brought out for readings during Mass and holydays and kissed by the faithful for blessings. Belcher was given access to one of these manuscripts, which she photographed and then made available online. She also reproduced and published 59 images of sacred paintings in her book without mentioning how she negotiated consent or what ethical guidelines she followed in the use of these items. [...] This is a source of great suffering for these spiritual people.[87]

While this does not apply to the manuscripts that we will be discussing in this book, digital scholarly editing discourses should display an awareness of these issues – namely that the *invisibility* and *inaccessibility* of materials might be a desirable component of editorial design as well and indeed mandated by the circumstances in which access to materials was granted to begin with. These considerations are taken seriously in other areas of the digital humanities, more broadly interested in cultural heritage presentation. Roopika Risam has highlighted the *Mukurtu Content Management System*,[88] tailored specifically to Indigenous communities so they may "exercise cultural protocols for what should be shared and with whom."[89] Some readers might not think this applicable to scholarly editions; in that, they would, I believe, be mistaken. Not every subject of edition may necessitate leaning away from the 'autocratic strain' that Gabler evoked (although it is worth wondering whether such a strain should be present in scholars at all; the obvious answer to which is: no), but there are many subjects of edition, especially but not exclusively from the 18th century onwards, that need to engage in sensitive exchange and implementation. We already see this realized in initiatives like the

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87 Yirga Gelaw Woldeyes, "Colonial Rewriting of African History: Misinterpretations and Distortions in Belcher and Kleiner's Life and Struggles of Walatta Petros," in: *Journal of Afroasiatic Languages, History and Culture* 9/2 (2020), 133–220, here 201.
88 See <https://mukurtu.org/> (accessed 28 February 2023).
89 Roopika Risam, "Decolonizing the Digital Humanities in Theory and Practice," in: *The Routledge Companion to Media Studies and Digital Humanities*, ed. by Jentery Sayers, London / New York: Routledge, 2018, 78–86, here 83.

German-Cuban collaboration on *Proyecto Humboldt Digital*, in immediate vicinity to and interrelation with editorial projects like the *edition humboldt digital*.[90] The crucial role of such considerations may become all the more true, the more we move into the direction of cultural heritage held by institutions like museums. Any specific design of a digital scholarly edition must primarily take into account what *should* be done rather than what could be done.

There is another concern that should be of interest to us, something that art historian Michael Camille pointed out in the 1990s: Not only did he oppose what he termed 'philological iconoclasm',[91] he also opposed the "movement toward the hegemony of the visual in late-twentieth-century culture"[92] and emphasized that "the manuscript itself is a locus of all five senses [...] [which] not only represents sight, touch, sound, taste, and smell; [but] [...] embodies them in its own material performance."[93] He goes on to elaborate:

> While the editors of medieval texts have increasingly come to value the iconic page and, like scholars in all fields, have realized the value of returning to the material site of production and reception, there is still little understanding of the somatics of reading. What I have termed *philological iconoclasm* erases not only the marks of pictorial making from the page but also any signs of material labor that are not pertinent to disembodied textual meaning. More recently, the proponents of the 'New Philology' have focused

90 See *Proyecto Humboldt Digital*, led by Tobias Kraft and Eritk Guerra, Berlin-Brandenburgische Akademie der Wissenschaften, Oficina del Historiador de La Ciudad de La Habana, 2019–present, <https://habanaberlin.hypotheses.org/> (accessed 28 February 2023), and *edition humboldt digital*, ed. by Ottmar Ette, Berlin-Brandenburgische Akademie der Wissenschaften, 2016–present, <https://edition-humboldt.de/> (accessed 28 February 2023).
91 See Michael Camille, "Philological Iconoclasm: Edition and Image in the 'Vie de Saint Alexis'," in: *Medievalism and the Modernist Temper*, ed. by R. Howard Bloch and Stephen G. Nichols, Baltimore [et al.]: Johns Hopkins University Press, 1996, 371–401.
92 Cited before but cited in full here again to avoid confusion with the preceding footnote: Michael Camille, "Sensations of the Page: Imaging Technologies and Medieval Illuminated Manuscripts," in: *The Iconic Page in Manuscript, Print, and Digital Culture*, ed. by George Bornstein and Theresa Lynn Tinkle, Ann Arbor: University of Michigan Press, 1998, 33–54, here 37.
93 Ibid., 38.

> our attention upon the manuscript in what Stephen J. Nichols sees as a more 'material philology.' But another term that he used to locate attention on the page was the *manuscript matrix*, which suggests the grid of the computer, not the flesh of the womb (which is the word's etymological source). Medieval texts and images have to be put back into the body, the matrix not of a network of meanings but the unstable site of sensation itself.[94]

This introduces the question whether the true future of scholarly editions lies not in the digital (or the printed) as their paradigm of being but in other forms of meaning and expression of meaning. Considering matters of editing *beyond text*, in our case by considering picture works and film works hereafter, must not necessarily equate a turning towards 'networks of meanings'. And if it does, there might come a time when we must turn away from 'knowledge sites' and instead turn towards 'sites of sensation', of sound, smell, taste, touch.[95] Doing so would also mean turning away from the digital environment as the sole conduit of certain kinds of source material study and (re-)configuration or rather, it *should* mean to regard it as *one* conduit that can be combined with and perhaps should only be realized in service of other kinds of engagement with materials, just as multimedial editions might have to be thought of – or come to be thought of – or be designed so as to be – multimedial in themselves.

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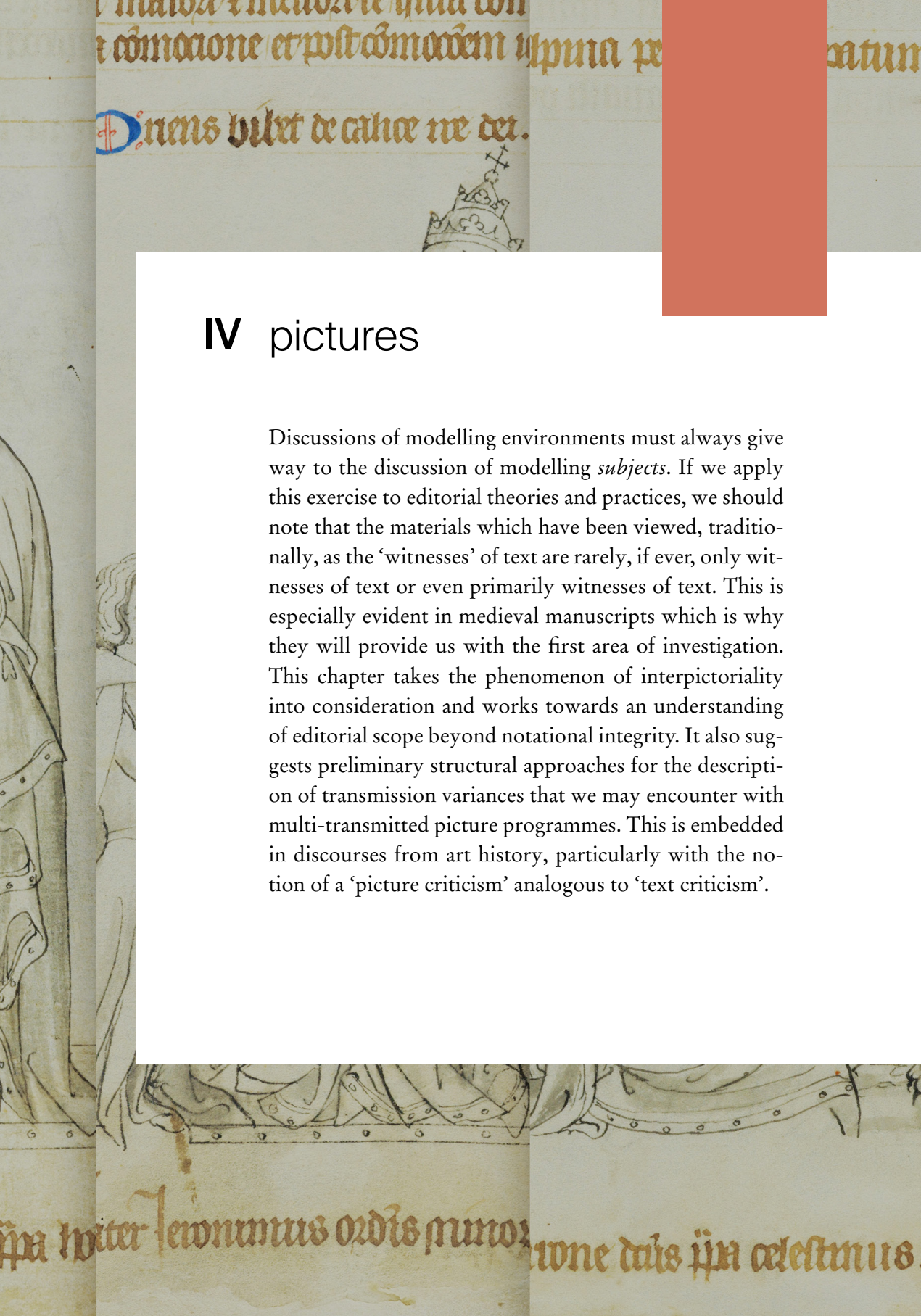
94 Camille 1998, 44.

95 For a digital humanities project pioneering approaches towards modelling cultural heritage experiences related to smell and olfaction, see *Odeuropa*, led by Inger Leemans [et al.], KNAW Humanities Cluster Amsterdam [et al.], 2021–2023, <https://odeuropa.eu/> (accessed 28 February 2023).



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IV pictures

Discussions of modelling environments must always give way to the discussion of modelling *subjects*. If we apply this exercise to editorial theories and practices, we should note that the materials which have been viewed, traditionally, as the 'witnesses' of text are rarely, if ever, only witnesses of text or even primarily witnesses of text. This is especially evident in medieval manuscripts which is why they will provide us with the first area of investigation. This chapter takes the phenomenon of interpictoriality into consideration and works towards an understanding of editorial scope beyond notational integrity. It also suggests preliminary structural approaches for the description of transmission variances that we may encounter with multi-transmitted picture programmes. This is embedded in discourses from art history, particularly with the notion of a 'picture criticism' analogous to 'text criticism'.

Nam quod legentibus scriptura, hoc idiotis praestat pictura cernentibus, quia in ipsa ignorantes vident, quod sequi debeant, in ipsa legunt qui litteras nesciunt; unde praecipue gentibus pro lectione pictura est.

Gregory the Great, MGH Epp. 2, *Gregorii I papae Registrum epistolarum*, Berlin: Weidmann, 1899, Liber XI, 10, 270.

IV

medieval picture works

that vary in transmission

We can trace the foundations of the "medieval western-image doctrine"[1] to a very specific point in time – a very specific set of letters, in fact. The correspondence in question occurred around the year 600 AD between Serenus, Bishop of Marseille, and Pope Gregory I.[2] Word had reached the Pope that Serenus was in the habit of destroying images in his church in order to stifle their worship. In response, Pope Gregory I penned words of admonishment. While he commended Serenus for his fight against idolatry, he mounted a defence of the depictions and, in doing so, advanced an educational argument that, unbeknownst to him, would be cited throughout the centuries to follow. A translation from the 19th century put it thus: "What Scripture presents to readers, a picture presents to the gaze of the unlearned: for in it even the ignorant see what they ought to follow; in it the illiterate read."[3]

The notion of pictures as 'books of the illiterate' caught the imagination of medieval writers and modern scholars alike.[4] Indeed, one might

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1 Celia M. Chazelle, "Pictures, Books, and the Illiterate: Pope Gregory I's Letters to Serenus of Marseilles," in: *Word & Image* 6/2 (1990), 138–152, here 138. In 1954, Ernst Kitzinger declared the sentiments from Gregory's letters "classical expressions of the Western attitude," a statement that must be seen in the context of his juxtaposition of Byzantine iconoclasm with Roman idolatry, cf. Ernst Kitzinger, "The Cult of Images in the Age before Iconoclasm," in: *Dumbarton Oaks Papers* 8 (1954), 83–150, here 132.
2 For information about the discourse surrounding these letters, see Chazelle 1990, *passim*.
3 James Barmby, *Gregory the Great* (The Fathers for English Readers), London: Society for Promoting Christian Knowledge, 1879, 201f.
4 Cf. Lawrence G. Duggan, "Was Art Really the 'Book of the Illiterate'?" in: *Reading Images and Texts: Medieval Images and Texts as Forms of Communication. Papers from*

be tempted to link several phenomena to the dictum, not least of all the fact that the typological picture bibles that became especially popular in the late Middle Ages were retroactively titled *Biblia pauperum*, the bibles of the poor. There is neither evidence that this was a common contemporary way of referencing these works nor is there evidence that these manuscripts and block-books[5] were intended for or used by those of low income; quite the opposite.[6] According to Gotthold Ephraim Lessing, an entry in the catalogue of the Herzog August library in Wolfenbüttel sufficed to promote the label, based on a faded addition to a manuscript by a later hand.[7] However it came to be – and that may be subject to further discussion in this chapter, when we return to the *Biblia pauperum* in a different capacity –, it has remained, and so has the sentiment that pictures served a certain communicative function.[8] If we

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the Third Utrecht Symposium on Medieval Literacy, Utrecht, 7–9 December 2000, ed. by Mariëlle Hageman and Marco Mostert, Turnhout: Brepols, 2005, 63–107 [originally published in *Word & Image* 5/3 (1989), 227–251].

5 Not all *Biblia pauperum* were block-books but some of them were. For studies of the *Biblia pauperum* in that context specifically, see Avril Henry, "The Iconography of the Forty-Page Blockbooks Biblia Pauperum: Form and Meaning," in: *Blockbücher des Mittelalters: Bilderfolgen als Lektüre*, ed. by Gutenberg-Gesellschaft, Main: von Zabern, 1991, 263–288, and Nigel F. Palmer, "Junius's Blockbooks: Copies of the 'Biblia pauperum' and 'Canticum canticorum' in the Bodleian Library and their Place in the History of Printing," in: *Renaissance Studies* 9/2 (1995), 137–165.

6 Cf. Maurus Berve, *Die Armenbibel: Herkunft, Gestalt, Typologie. Dargestellt anhand von Miniaturen aus der Handschrift Cpg 148 der Universitätsbibliothek Heidelberg* (Kult und Kunst; vol. 4), Beuron: Beuroner Kunstverlag, 1969, 7–9, and Avril Henry (Ed.), *Biblia pauperum: A Facsimile and Edition*, Aldershot: Scolar Press, 1987, 3f. and 17f.

7 Cf. Gerhard Schmidt, *Die Armenbibeln des XIV. Jahrhunderts*, Graz [et al.]: Böhlau, 1959, 1. For one of the earliest references to this, see Friedrich Laib and Franz Joseph Schwarz (Eds.), *Biblia pauperum*, Zürich: Leo Wörl, 1867, 14. And for Lessing's assessment itself, see Gotthold Ephraim Lessing, "Ehemalige Fenstergemälde im Kloster Hirschau," in: id., *Zur Geschichte und Literatur: Aus den Schätzen der Herzogl. Bibliothek zu Wolfenbüttel* (vol. 2), Braunschweig: Fürstl. Waysenhaus-Buchhandlung, 1773, 317–344, here 335–337 [also published in *Gotthold Ephraim Lessing's sämmtliche Schriften* (vol. 9), ed. by Karl Lachmann, Berlin: Voß, 1839, 228–245].

8 This can be seen in the many examples of literature concerned with the 'reading' of pictures and images or the difficulty thereof, cf. e.g. Herbert L. Kessler, "Reading Ancient and Medieval Art," in: *Word & Image* 5/1 (1989), 1; Suzanne Lewis, *Reading Images: Narrative Discourse and Reception in the Thirteenth-Century Illuminated Apocalypse*, Cambridge: Cambridge University Press, 1996; Elizabeth Sears, Thelma K. Thomas and Ilene H. Forsyth (Eds.), *Reading Medieval Images: The Art Historian and the Object*, Ann Arbor: University of Michigan Press, 2002; and Mariëlle Hageman

recall the primacy of text-based hermeneutics in the history of scholarship and especially the humanities, it will hardly surprise that we find at least one legitimization strategy for pictures rooted in their relation to the function of texts, regardless of whether this is explicitly framed as 'books for the poor' or not.

A.
TEXT-IMAGE STUDIES

In hindsight, one might view the extension of editorial theory towards picture works as an organic evolution of the interdisciplinary processes that began decades ago, precisely because of the closely entwined transmission of textual and pictorial materials. In the 1970s and 1980s, a field of text-image studies emerged. This development manifested itself quite notably in the publication of the journal *Word & Image: A Journal of Verbal/Visual Enquiry.* In German academia, it was furthermore marked by an increase in respective collected volumes.[9] Of note, in the German context, is also the 'Catalogue of German-Language Illustrated Medieval Manuscripts', the *Katalog der deutschsprachigen illustrierten Handschriften des Mittelalters* (KdiH), which was initiated by Hella

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and Marco Mostert (Eds.), *Reading Images and Texts: Medieval Images and Texts as Forms of Communication. Papers from the Third Utrecht Symposium on Medieval Literacy, Utrecht, 7–9 December 2000*, Turnhout: Brepols, 2005. See also, more generally from the point of view of literary studies, James A. W. Heffernan, "Reading Pictures," in: *PMLA* 143/1 (2019), 18–34, online: <https://doi.org/10.1632/pmla.2019.134.1.18>.

9 For an increase in collected volumes in Germany pertaining to text-image studies, beginning in the 1970s, see Hella Frühmorgen-Voss and Norbert H. Ott (Eds.), *Text und Illustration im Mittelalter: Aufsätze zu den Wechselbeziehungen zwischen Literatur und bildender Kunst* (Münchener Texte und Untersuchungen zur Deutschen Literatur des Mittelalters; vol. 50), München: C.H. Beck, 1975; Christel Meier and Uwe Ruberg (Eds.), *Text und Bild: Aspekte des Zusammenwirkens zweier Künste im Mittelalter und früher Neuzeit*, Wiesbaden: Reichert, 1980; Wolfgang Harms (Ed.), *Text und Bild, Bild und Text: DFG-Symposion 1988*, Stuttgart: J.B. Metzler, 1990; Klaus Dirscherl (Ed.), *Bild und Text im Dialog* (Passauer interdisziplinäre Kolloquien; vol. 3), Passau: Rothe, 1993; and Karin Krause and Barbara Schellewald (Eds.), *Bild und Text im Mittelalter* (Sensus; vol. 2), Köln [et al.]: Böhlau, 2011. See furthermore the important collection of essays in Michael Curschmann, *Wort, Bild, Text: Studien zur Medialität des Literarischen in Hochmittelalter und früher Neuzeit* (Saecvla spiritalia; vols. 43 and 44), Baden-Baden: Valentin Koerner, 2007.

Frühmorgen-Voss and Norbert H. Ott in Munich in 1991 and continues to be published to this day; since 2016 in a digital format as well as in print.[10]

As for the emergence of text-image studies, it might be fair to say that this new field responded to a desideratum – a gap in the research that had not been filled by either art history or literary studies, leaving many questions about manuscript culture, multimedial expressions of thought, and networks of meaning unanswered. Research that is bound to a history of transmission will always yield to the intent of observation. The body of evidence may remain unchanged, bar rare revelations, but it does not speak for itself; nor does it speak to everyone with the same voice. When we link evidences to support an argument, that argument derives from a point of view that shapes the lens with which we regard an object of study. Accordingly, information will have already faded in or out, depending on the criteria of relevance that guide our intrinsic *Erkenntnisinteresse* ('interest in insight'). When studying a manuscript, a palaeographer will notice certain details and those will likely be different from the features a codicologist may observe, a philologist, an art historian. Here the slopes and curves of letters, there the binding, here the ink, there the flourishes of decoration, here the commentary in the margins, in between lines, there the tactile feeling of flesh on the one and hair on the other side of the parchment; each and every clue, visual, physical, semantic, or otherwise, meaningful in its own right. I am, perhaps unnecessarily so, repeating a sentiment that has echoed throughout the previous chapters, and yet I do not think it redundant since true interdisciplinarity – the bridging of the gaps that fall to the wayside of specialization – challenge this aspect of scholarship the most: the patterns of thinking pre-established in our mind, inherited from the foundations

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10 See *Katalog der deutschsprachigen illustrierten Handschriften des Mittelalters* (KdiH; vol. 1–), initiated by Hella Frühmorgen-Voss and Norbert H. Ott, ed. by Ulrike Bodemann, Kristina Freienhagen-Baumgardt, Pia Rudolph, Peter Schmidt, Christine Stöllinger-Löser and Nicola Zotz, München: C. H. Beck, 1991–present. See also the web presence of the project, <https://kdih.badw.de/das-projekt.html> (accessed 11 March 2023), and the database *Deutschsprachige illustrierte Handschriften des Mittelalters* which is based on the KdiH and covers, at the date of access, the first eight volumes; cf. <https://kdih.badw.de/datenbank/start> (accessed 12 June 2023).

and frameworks of our disciplines, trained on specific sets of materials, with an eye towards specific kinds of evidences. Such a challenge comes with its own set of pitfalls; ignorance of that which is already known, superficiality of observations, obsolescence of references. Two considerations compel me to move forward still: (1) While editorial theory has not reckoned with pictorial or textual-pictorial materials in any sustained way, and while these materials do not speak for themselves, the pull of their evidentiary entanglement is strong enough to have reached across disciplines before, indicating a wealth of materials in need of scholarly edition or, at the very least, deserving of editorial attention. (2) The editorial concern that colours our view on these materials may well be distinct from the views that have come before.

There is no singular editorial concern either, of course, just as there is no singular type of material that would be of interest to us here. It might be best to understand both as contingent on a variance in transmission, for the purposes of the current inquiry. Variance in transmission meaning traces of genetic evolution or the existence of multiple witnesses of a 'work' (a classical editorial boundary that I will adhere to for the time being). Since the example of Diebold Lauber's workshop, as discussed in **CHAPTER I**, has already shown that we can principally conceive of multi-versioned picture works in the context of manually reproduced medieval manuscripts, attention must shift towards the particulars. What is the state of research that is relevant for the question of their scholarly edition, i.e. the question of a structural making-sense?

Studies exist that examine individually illustrated manuscripts of epic poems about heroic figures from legends and sagas like Parsifal, Tristan, or Roland.[11] There are also studies with a broader scope, specifically analysing the evolution of the text-image composition of

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11 See, for example, Norbert H. Ott, "Bildstruktur statt Textstruktur: Zur visuellen Organisation mittelalterlicher narrativer Bilderzyklen; die Beispiele des Wienhausener Tristanteppichs I, des Münchner Parzival Cgm 19 und des Münchner Tristan Cgm 51," in: *Bild und Text im Dialog*, ed. by Klaus Dirscherl, Passau: Rothe, 1993, 53–70, and James A. Rushing Jr., "Images at the Interface: Orality, Literacy, and the Pictorialization of the Roland Material," in: *Visual Culture and the German Middle Ages*, ed. by Kathryn Starkey and Horst Wenzel, Basingstoke [et al.]: Palgrave Macmillan, 2005, 115–134.

multi-transmitted works like the aforementioned *Biblia pauperum*.[12] There is, to my knowledge, however, no comprehensive meta-study of the phenomenon as such, that is to say, the phenomenon of copying a picture programme (or cycle) alongside a text as well as independently from a text.[13] Works that fall into this category with varying degrees of interrelation and variance in transmission would be, for example, the *Bibles moralisées*, the *Speculum humanae salvationis*, the *Speculum virginum*, the *Sachsenspiegel*, the *Legenda aurea*, the *Beatus*, or the *Vaticinia summis pontificibus*, to name only a few.[14] Their circulation

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12 See Hanna Wimmer, Malena Ratzke and Bruno Reudenbach (Eds.), *Studien zur Biblia pauperum* (Vestigia bibliae; vol. 34), Bern [et al.]: Peter Lang, 2016.

13 Henrike Manuwald's observations about text-image relations in medieval manuscripts may come closest, but they are confined to manuscripts from German-speaking regions and do not specifically take into consideration whether there is a pictorial transmission variance (by way of multi-transmission) and what that might mean for the relation of text-image work witnesses among each other; see Henrike Manuwald, "Text-Bild-Beziehungen in der mittelalterlichen Manuskriptkultur (des deutschsprachigen Raums)," in: *Text – Bild – Ton: Spielarten der Intermedialität in Mittelalter und früher Neuzeit,* ed. by Joachim Hamm and Dorothea Klein, Würzburg: Königshausen & Neumann, 2021, 189–232. If we take a broader view on the debate about 'originals' and 'copies' and the transformational processes that (art-)works were subject to in medieval and early modern times, we will find a plethora of case studies, such as the art-historical explorations of this complex relationship in Wolfgang Augustyn and Ulrich Söding (Eds.), *Original – Kopie – Zitat: Kunstwerke des Mittelalters und der Frühen Neuzeit; Wege der Aneignung, Formen der Überlieferung* (Veröffentlichungen des Zentralinstituts für Kunstgeschichte in München; vol. 26), Passau: Klinger, 2010. See also Antonia Putzger and Joris Corin Heyder, "Kopieren, Faksimilieren, Dokumentieren: Vormoderne Ästhetiken der Genauigkeit in Bild und Schrift," in: *Duplikat, Abschrift & Kopie: Kulturtechniken der Vervielfältigung*, ed. by Jörg Paulus, Andrea Hübener and Fabian Winter, Köln: Böhlau, 2020, 207–232, which connects manual reproduction with the issue of facsimilization sketched in **CHAPTER I**.

14 For reference, see, respectively, John Lowden, *The Making of the Bibles Moralisées* (2 vols.), University Park: Pennsylvania State University Press, 2000; Manuela Niesner, *Das Speculum humanae salvationis der Stiftsbibliothek Kremsmünster: Edition der mittelhochdeutschen Versübersetzung und Studien zum Verhältnis von Bild und Text* (Pictura et poesis; vol. 8), Köln [et al.]: Böhlau, 1995; Jutta Seyfarth (Ed.), *Speculum virginum* (Corpus Christianorum, Continuatio Medievalis; vol. 5), Turnhout: Brepols, 1990; Dagmar Hüpper, "Funktionstypen der *Bilder* in den Codices picturati des Sachsenspiegels," in: *Pragmatische Schriftlichkeit im Mittelalter: Erscheinungsformen und Entwicklungsstufen*, ed. by Hagen Keller, München: Fink, 1992, 231–249; Werner Williams-Krapp, "Bild und Text: Zu den illustrierten Handschriften der ‚*Legenda aurea*' des französischen und des deutschsprachigen Raums," in: *Archiv für Kulturgeschichte* 97/1 (2015), 89–107; John Williams, *Visions of the End in Medieval Spain: Catalogue of Illustrated Beatus Commentaries on the Apocalypse and Study of the*

ranges from a handful to several hundred illustrated witnesses.[15] One might note that these works often appear to be either typological, didactic, eschatological, or diagrammatic in nature; this is merely a small observation, the significance of which I cannot ascertain. Quite apparently, transmitting a picture programme in a relatively stable yet mutable way was not a unique occurrence. You might ask why this should be interesting, in and of itself. First of all, the fact that a work – regardless of whether it consists of text, images, or both – has survived in multiple manuscripts is an indication of its dissemination and outreach. Second of all, the fact that a picture programme was copied alongside text – or even independently from a specific text – may speak to its role and reception within a work or as a work. Third of all, the relationship between multiple witnesses is more complex than that of an 'original' and its 'copies' and this relationship can be further illumined by the study of the stability or, conversely, the alteration of a picture programme across its transmission history, similarly as one would do with texts.

This is not to say that it might not be equally as interesting and revealing to study the various ways in which the transmission of a singular text (or rather 'work') might have been illustrated over time.[16] However,

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Geneva Beatus, ed. by Therese Martin, Amsterdam: Amsterdam University Press, 2017; and Hélène Millet, *Les successeurs du pape aux ours: Histoire d'un livre prophétique médiéval illustré (Vaticinia de summis pontificibus)*, Turnhout: Brepols, 2004 [originally published as *Il libro delle immagini dei papi: Storia di un testa profetico medievale*, transl. by Cristina Colotto, Rome: Viella, 2002].

15 According to Lowden 2000 (vol. 1), 11, there are seven extant copies of the *Bibles moralisées*. The *Sachsenspiegel* survives in four illustrated manuscripts (Mscr. Dresd. M. 32; Cod. Pal. germ. 164; Cim I 410; Cod. Guelf. 3.1 Aug. 2°) in addition to around 460 manuscripts containing only the text or fragments thereof. For the *Vaticinia de summis pontificibus*, Hélène Millet lists 102 manuscripts in Millet 2004, 213–216. *FAMA: Œuvres latines médiévales à succès,* the portal maintained by the CNRS, IHRT, and the École nationale des chartes, edited by Pascale Bourgain and Dominique Stutzmann, which compiles the known information about the most widely circulated medieval manuscripts written in Latin from different manuscript catalogues, lists 951 Latin manuscripts for the *Legenda aurea*, <http://fama.irht.cnrs.fr/oeuvre/254308>. For the *Speculum humanae salvationis*, the bibliography refers to 400 manuscripts, <http://fama.irht.cnrs.fr/oeuvre/267499>, and for the *Speculum virginum* to 36 witnesses, <http://fama.irht.cnrs.fr/oeuvre/254664>. For the *Beatus* commentary, it states that 43 manuscripts are known, <http://fama.irht.cnrs.fr/oeuvre/254577> (all accessed 7 June 2023).

16 An example for this would be Cora Dietl, Christoph Schanze and Friedrich Wolfzettel (Eds.), *Artusroman und Bildlichkeit* (Schriften der Internationalen Artusgesellschaft; vol. 17), Berlin / Boston: De Gruyter, 2023.

we should be cognizant of a distinction here: In the case of picture programmes that were transmitted multiple times, such as the *Biblia pauperum* or the examples from the *Spiegelliteratur* (the genre of *specula*),[17] the pictures were evidently more than a mere illustration of a text; this might also be true for other so-called illustrations, a designation that by default links such images to a text, in the service of which they perform, but it is undeniable in cases where picture programmes developed a life of their own. By way of example, I want to point to the *Vaticinia de summis pontificibus*, a series of pope prophecies that originated in the 13th century.[18] They were later appropriated by the Protestant reformers of the 16th century, specifically Andreas Osiander, Erhard Schön, and

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17 On the topic of the so-called *Spiegelliteratur* (which translates to mirror literature) in general, see Herbert Grabes, *Speculum, Mirror und Looking-Glass: Kontinuität und Originalität der Spiegelmetapher in den Buchtiteln des Mittelalters und der englischen Literatur des 13.–17. Jahrhunderts* (Anglia Book Series; vol. 16), Tübingen: Max Niemeyer, 2018 [reprint; originally published in 1973].

18 Millet 2004 and Fleming 1999 have been named before. For further literature, see Renate Blumenfeld-Kosinski, *Poets, Saints, and Visionaries of the Great Schism: 1378–1417*, University Park, Pennsylvania: Penn State Press, 2010, 166–178; Herbert Grundmann, "Die Papstprophetien des Mittelalters," in: *Archiv für Kulturgeschichte* 19/1 (1928), 77–138 [reprinted in *Ausgewählte Aufsätze: Teil 2 – Joachim von Fiore* (Schriften der Monumenta Germaniae Historica; vol. 25), Stuttgart: Hiersemann, 1977, 1–57]; Robert E. Lerner, "Ursprung, Verbreitung und Ausstrahlung der Papstprophetien des Mittelalters," in: *Weissagungen über die Päpste. Vat. Ross. 374*, ed. by Robert E. Lerner and Robert Moynihan, transl. by Walter Simon, Zürich: Belser, 1985, 11–76 [introductory volume of the facsimile edition of Cod. Vat. Ross. 374]; Robert E. Lerner, "On the Origins of the Earliest Latin Pope Prophecies: A Reconsideration," in: *Fälschungen im Mittelalter: Teil 5 – Fingierte Briefe. Frömmigkeit und VII Fälschung. Realienfälschungen* (Schriften der Monumenta Germaniae Historica; vol. 33), Hannover 1988, 611–635; Orit Schwartz and Robert E. Lerner, "Illuminated Propaganda: The Origins of the 'Ascende Calve' Pope Prophecies," in: *Journal of Medieval History* 20 (1994), 157–191; Marjorie Reeves, "The Vaticinia de Summis Pontificibus: A Question of Authority," in: *Intellectual Life in the Middle Ages: Essays Presented to Margaret Gibson*, ed. by Lesley Smith and Benedicta Ward, London [et al.]: Hambledon Press, 1992, 145–156 [reprinted in Marjorie Reeves, *The Prophetic Sense of History in Medieval and Renaissance Europe* (Variorum Collected Studies; vol. 660), London / New York: Routledge, 1999, part VII, 145–156]; Pia Holenstein Weidmann, "Die Vaticinia pontificum: Tradition einer Bildprophetie," in: *Nova acta Paracelsica* 13 (1999), 153–184; Paola Guerrini, *Propaganda politica e profezie figurate nel tardo Medioevo* (Nuovo Medioevo; vol. 51), Napoli: Liguori, 1997; Paola Guerrini, "La propaganda politica nei manoscritti illustrati," in: *La propaganda politica nel Basso Medioevo: Atti del XXXVIII Convegno storico internazionale. Todi 14–17 Ottobre 2001*, Spoleto: Centro italiano di studi sull'alto Medioevo, 2002, 561–582.

Hans Sachs who adopted the picture programme in 1527[19] but not the Latin text, instead fitting the images (adapted by Erhard Schön) with vernacular verses (written by Hans Sachs) to capture the political potency of the iconography in changed circumstances of reception.[20] The 'mystic' nature of the origin of the prophecies apparently led to them being attributed to Hildegard von Bingen at some point[21] although this might be a bibliographical fault, given that Osiander published a second book in the same year with prophecies that he attributed to her.[22]

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19 See *Eyn wunderliche Weyssagung von dem Babstumb wie es yhm biß an das endt der welt gehen sol jn figuren oder gemæl begriffe gefunden zu Nuermberg ym Cartheuser Closter vnd ist seher alt. Eyn vorred Andreas Osianders. Mit g°utter verstendtlicher außlegung durch gelerte leut verklert. Welche Hans Sachs yn teutsche reymen gefast vnd darzu gesetzt hat*, Nürnberg: Guldenmund, 1527. A digitized facsimile edition and transcription of this work exists as part of a series of editions published by the Taylor Institution Library, one of the Bodleian Libraries of the University of Oxford, in this case edited by Kezia Fender and published in 2015: <https://editions.mml.ox.ac.uk/editions/weyssagung/> (accessed 2 July 2023).

20 Cf. David Heffner, "Regnum vs. Sacerdotium in a Reformation Pamphlet," in: *The Sixteenth Century Journal* 20/4 (1989), 617–630, here 619. See also Jonathan Green, *Printing and Prophecy: Prognostication and Media Change 1450–1550*, Ann Arbor: University of Michigan Press, 2012, 96–99. On the figure of Hans Sachs, see Niklas Holzberg and Horst Brunner, *Hans Sachs: Ein Handbuch*, Berlin / Boston: De Gruyter, 2020, and here, with respect to the changed verses, 29, work 134. On the topic of the Protestant appropriation of the prophecies, see Aby M. Warburg, *Heidnisch-antike Weissagung in Wort und Bild zu Luthers Zeiten* (Sitzungsberichte der Heidelberger Akademie der Wissenschaften, Philosophisch-Historische Klasse; vol. 1919/26), Heidelberg: Winter, 1920 [reprinted in Aby M. Warburg, *Ausgewählte Schriften und Würdigungen* (Saecvla spiritalia; vol. 1), ed. by Dieter Wuttke, Baden-Baden: Koerner, ^{3}1992, 199–304]. On the medieval relationship between prophecies and political as well as religious unrest, see also Robert E. Lerner, "Medieval Prophecy and Religious Dissent," in: *Past & Present* 72 (1976), 3–24, and his assessment that "[p]rophecies, of course, did not create Luther or the doctrine of solifidianism, but German receptivity for sweeping religious change may have been heightened by the circulation of numerous texts that expressed dissatisfaction with the government of the Church and certainty of imminent ecclesiastical renovation" (ibid., 24).

21 This attribution applies, for example, to the coloured editions of the pope prophecies published by Gabriel Kantz in Zwickau, VD 16 W 4645; cf. München, BSB, Res/4 H.eccl. 870,29, online: <https://mdz-nbn-resolving.de/urn:nbn:de:bvb:12-bsb00053611-6>, and München, BSB, 4 H.eccl. 826, online: <https://mdz-nbn-resolving.de/urn:nbn:de:bvb:12-bsb10160055-6> (both accessed 2 July 2023; noted in case the record should be corrected in the future).

22 See VD 16 H 3633; *Sant Hildegarten weissagung vber die Papisten vnd genanten geistlichen, welcher erfüllung zu vnsern zeyten hat angefangen, vnd volzogen soll werden*, with a preface by Andreas Osiander, Zwickau: Gabriel Kantz, 1527; Munich, BSB, 4 H.eccl. 827, online: <https://mdz-nbn-resolving.de/urn:nbn:de:bvb:12-bsb10160056-2>.

While the picture programme as found under the *Vaticinia de summis pontificibus* umbrella made reference to the Latin text it accompanied or vice versa, it did not, in fact, originate with those manuscripts either, rather having been borrowed from or at least heavily influenced by a Byzantine tradition of oracles,[23] and it would furthermore seem as though the picture programme was more compelling to viewers and readers than any accompanying text, taking precedence in the long term.[24] The vernacular verses reinterpreted the images, thereby creating a new link that someone unfamiliar with the earlier tradition of the images could misunderstand in its causality. Here, as dramatic a statement as it might seem, the images do not bend to the text. The text bends to the images.[25]

Cf. also Michael Embach, "Beobachtungen zur Überlieferungsgeschichte Hildegards von Bingen im späten Mittelalter und in der frühen Neuzeit. Mit einem Blick auf die Editio princeps des ‚Scivias'," in: *‚Im Angesicht Gottes suche der Mensch sich selbst': Hildegard von Bingen (1098–1179)*, ed. by Rainer Berndt, Berlin: Akademie-Verlag, 2001, 401–460, here 451. Green notes that the Hildegard prophecies and the pope prophecies circulated in at least two bound collections, combined with another work, "suggesting that these three may have been distributed as a unit or regarded as such by some readers" (Green 2012, 225, fn. 29).

23 Aby Warburg already pointed this out in Warburg 1920/[3]1992, 245f. See, on the origins on the picture programme, furthermore, Andreas Rehberg, "Der ‚Kardinalsorakel'-Kommentar in der ‚Colonna'-Handschrift Vat.lat. 3819 und die Entstehungsumstände der Papstvatizinien," in: *Florensia: Bolletino del Centro Internazionale di Studi Gioachimiti* 5 (1991), 45–112; Andreas Rehberg, "Ein Orakel-Kommentar vom Ende des 13. Jahrhunderts und die Entstehungsumstände der Papstvatizinien: Ein Arbeitsbericht," in: *Quellen und Forschungen aus italienischen Archiven und Bibliotheken* 71 (1991), 749–773; and Lerner 1985, 13–21. It would appear that the texts were borrowed in conjunction with the picture programme and translated from Greek to Latin, accounting for some of their obscurity, cf. Hannes Möhring, *Der Weltkaiser der Endzeit: Entstehung, Wandel und Wirkung einer tausendjährigen Weissagung* (Mittelalter-Forschungen; vol. 3), Stuttgart: Thorbecke, 2000, 272–275, and Grundmann 1928/1977, 13.

24 Matthias Kaup has pointed out that the prophetic literature flourished during the time of the Great Western Schism (1378–1417) because it provided orientation amidst the confusion; cf. Matthias Kaup, "Der Liber Horoscopus: Ein bildloser Übergang von der Diagrammatik zur Emblematik in der Tradition Joachims von Fiore," in: *Die Bildwelte der Diagramme Joachims von Fiore: Zur Medialität religiös-politischer Programme im Mittelalter*, ed. by Alexander Patschovsky, Ostfildern: Thorbecke, 2003, 147–184, here 147. It stands to reason that it also flourished during the time of the reformation due to this, as well as having a propagandistic political function; cf. ibid., 174, and Lerner 1976.

25 Jonathan Green goes so far as to say that "[t]he traditional roles of word and image are here reversed: it is the unlearned who need the text to aid their understanding, while

B.
OF CROWS AND DOVES

After having severed this assumed inherent connection between a text and its picture programme – or the picture programme and its text –, it might be helpful to take a step back and clarify the terminology and framework of the considerations that are to follow.

A glance at the research literature confirms that there is no concise agreed upon definition of what a 'picture programme' (*Bildprogramm*), 'picture cycle' (*Bilderzyklus*), or 'picture system' (*Bildsystem*) might be – the terms are often either used with a tacit understanding or denote a rather specific focal point.[26] The *Katalog der deutschsprachigen*

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intelligent people, according to Osiander, will comprehend the images immediately" (Green 2012, 98).

26 Definitions do exist, of course. In the context of manuscript illumination, Christine Jakobi-Mirwald defines a programme as "a planning concept underlying a book design which selects the depictions and distributes them across the book (or among other picture carriers)" (Christine Jakobi-Mirwald, *Buchmalerei: Terminologie in der Kunstgeschichte*, Berlin: Reimer, ⁴2015, 23, original: "Ein einer Buchausstattung zugrundeliegendes planerisches Konzept, das die Darstellungen auswählt und im Buch (bzw. auf anderen Bildträgern) verteilt"). This is differentiated from a *Zyklus* ('cycle') which is the "series of pictures that, taken together, illustrate a text" (ibid., 24, "Serie von Bildern, die zusammen einen Text illustrieren"). In the definition of cycles, Jakobi-Mirwald furthermore states that the "transmission carriers of picture programmes may be ordered in transmission stemmata that parallel the textual transmission or proceed independently from it" (Jakobi-Mirwald 2015, 24, "Die jeweiligen Überlieferungsträger der Bildprogramme können ggf. zu Überlieferungsstammbäumen (Stemmata) angeordnet werden, die parallel zur Textüberlieferung oder davon unabhängig laufen." – 'stemmata' is bolded in the original). Unfortunately, we do not learn more about this practice. Another definition of a 'picture programme' can be found in the introduction to iconography by Frank Büttner and Andrea Gottdang. It reads: "But the purpose of iconography does not merely lie in the interpretation of singular picture works. Since time immemorial buildings or single rooms of special importance have been decorated with extensive series of pictures and figurines that are, generally speaking, not only linked through a formal relation of decoration but must be understood as an overarching unit of content, for which the term of the 'programme' has established itself." (Frank Büttner and Andrea Gottdang, *Einführung in die Ikonographie: Wege zur Deutung von Bildinhalten*, München: C.H. Beck, 2006, 24, original: "Die Ikonographie hat aber ihre Aufgabe nicht nur in der Deutung von einzelnen Bildwerken. Bauwerke oder einzelne Räume von besonderem Rang wurden seit alters her mit umfassenden Folgen von Bildern und Figuren geschmückt, die in der Regel nicht nur einen formalen Dekorationszusammenhang bilden, sondern auch als übergreifende inhaltliche Einheit aufzufassen sind, für die sich der Begriff des ‚Programmes' eingebürgert hat.") For an application of the term

illustrierten Handschriften des Mittelalters (KdiH) states that "[s]ome manuscripts provide a continuous iconographic program indicating that the provision of both text and images was part of the basic concept."[27]

Instead of 'iconographic program', the German version of the documentation uses the arguably broader term of the *Bildprogramm*.[28] For the purposes of this chapter, it might be useful to define a picture programme as a series of pictures that was, to a certain degree, schematic in its order, arrangement, and composition, and relatively stable in its transmission, meaning that it was, similarly to a textual work, fixed in some way. When regarding such picture programmes, there tends to be an element of familiarity, if not in the execution of an image, then in its placement within the wider work context; no picture stands on its own, they all stand together. This is regardless of whether the pictures can be understood on their own or whether all of them are included in all of the witnesses; the point being that the work – in an ideal representation as well as in a material single witness – always consists of a series of pictures that bear a relation to each other and to the text that they share a space with; this relation does not have to be one of a narrative logic wherein one consecutive story is told that progresses throughout the pictures; the relation can be schematic more than it is sequential.[29]

Bildsystem, see Wolfgang Kemp, "Mittelalterliche Bildsysteme," in: *Marburger Jahrbuch für Kunstwissenschaft* 22 (1989), 121–134, and his explanation for using the term of the 'picture system' as a way to capture both narrative and symbolic qualities of medieval picture works that had a tendency to 'aggregate' meaning in complex ensembles, cf. ibid., 121–123 and 126.

27 Cf. <https://kdih.badw.de/en/text-and-image.html> (accessed 11 March 2023).

28 Cf. <https://kdih.badw.de/text-und-bild.html> (accessed 11 March 2023).

29 The notion of medieval picture programmes being a type of 'storytelling' reminiscent of 'modern' forms like comic strips has been analysed in some recent studies, such as in Isabell Brähler-Köhler, "Von der Handschrift zum Sammelbild, vom Bilderbogen zum Comic: Die Rolandssage in mittelalterlichen und neuzeitlichen Text-Bild-Kombinationen," in: *Geschichten sehen, Bilder hören: Bildprogramme im Mittelalter. Akten der Tagung Bamberg 2013* (Bamberger interdisziplinäre Mittelalterstudien; vol. 8), ed. by Andrea Schindler and Evelyn Meyer, Bamberg: University of Bamberg Press, 2015, 49–74. The *Erzählung* ('narrative') of content has been a staple of writings about picture programmes, cycles, or, in Kemp's nomenclature, systems, for much longer, however; especially since it was 'put on the map' by Kemp, so to speak, cf. Karin Lerchner, "Narration im Bild: Szenische Elemente im Bildprogramm des ‚Welschen Gastes'," in: *Beweglichkeit der Bilder: Text und Imagination in den illustrierten Handschriften des ‚Welschen Gastes' von Thomasin von Zerclaere* (Pictura et poesis; vol. 15), ed. by Horst

If there were to be a witness of any of the discussed works that were to contain only one picture from the overall series without any placeholders allocated for pictures that were then not realised and no indication that there were originally more pictures that are now lost, this would be highly curious.[30] Generally, when it comes to medieval imagery and its eligibility for editorial concern, we should remember what art historian Wolfgang Kemp has stated: Namely that "the great common feature of the Christian period of art between 400 and 1400 AD is the dominance of the images over the 'image' (in the emphatic sense given to it by modern times) and of the contexts over the text."[31]

Although no example for a picture from a picture programme being transmitted entirely outside of its programmatic context immediately comes to mind (which is not to say that such an example does not exist), the pertinent question is whether such a witness could still be considered a witness of the work, if we take the picture programme to be the work, or at least the pictorial part of the work. It might be possible to answer this in the affirmative, provided that the relation between the witness and the work were stronger than one of mere visual reference or what might

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Wenzel and Christina Lechtermann, Köln [et al.]: Böhlau, 2002, 65–81, here 65. See also Horst Wenzel and C. Stephen Jaeger (Eds.), *Visualisierungsstrategien in mittelalterlichen Bildern und Texten*, Berlin: Erich Schmidt, 2006.

30 Aside from the issue of picture *programmes* and whether there are manuscripts that contain a single picture from such a programme without any indication that it was part of a larger series, examples for manuscripts where space was allotted for illustrations and miniatures that were then never realised abound and Christopher de Hamel once phrased it nicely by stating that "[s]ome pages look very strange, like a wall with random bricks missing." (Christopher de Hamel, *The British Library Guide to Manuscript Illumination: History and Techniques*, Toronto / Buffalo: University of Toronto Press, 2001, 48.) See also the verdict by Karin Schneider that the spaces designated for *Bilderzyklen* ('picture cycles') – used by her to mean what we might call a *Bildprogramm*, such as the picture programme of the *Speculum humanae salvationis* – can be particularly telling as to a manuscript's transmission and use of reference material, cf. Karin Schneider, *Paläographie und Handschriftenkunde für Germanisten: Eine Einführung* (Sammlung kurzer Grammatiken germanischer Dialekte. B: Ergänzungsreihe; vol. 8), Berlin / Boston: De Gruyter, 2014, 157.

31 Wolfgang Kemp, *Christliche Kunst: Ihre Anfänge, ihre Strukturen*, München: Schirmer/Mosel, 1994, 17, original: "Die große Gemeinsamkeit der christlichen Kunstepoche, die von 400 bis 1400 reicht, ist die Dominanz der Bilder über das ‚Bild' (im emphatischen Sinne, den ihm die Neuzeit gibt) und der Kontexte über den Text."

be called *interpictoriality* or even *intermediality*[32] – a term applicable here since these reference systems do not discriminate between quotations among depictions in manuscripts, tapestry, stained glass, et cetera, any more than they do between the (intentional or otherwise) relation of text and images within the same medium or surface of expression.[33] Therefore, for the purposes of editorial purview, the visual 'inspiration' of other works must be ruled out as a form of versioning the work that the picture programme is said to constitute. Few work witnesses will ever bear witness to the whole work as it was or came to be, especially when they represent temporal glimpses at works that evolved and expanded over long periods of time; not to mention that in the case of contradictory versions of a work, it would be impossible for one witness to contain 'the whole work' unless it contained those contradictory versions. But there are different layers of permeability, and the description of a picture programme necessitates its delineation from visually related but intellectually to a significant degree autonomous presentations that

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32 On the topic of medieval and early modern forms of intermediality, see Joachim Hamm and Dorothea Klein (Eds.), *Text – Bild – Ton: Spielarten der Intermedialität in Mittelalter und früher Neuzeit*, Würzburg: Königshausen & Neumann, 2021, and Alfred Messerli, "Intermedialität," in: *Die Intermedialität des Flugblatts in der Frühen Neuzeit*, ed. by Alfred Messerli and Michael Schilling, Stuttgart: Hirzel, 2015, 9–24. On the topic of interpictoriality, see Guido Isekenmeier (Ed.), *Interpiktorialität: Theorie und Geschichte der Bild-Bild-Bezüge*, Bielefeld: transcript-Verlag, 2013. Sometimes, instead of interpictoriality, *Interikonizität* or *Interbildlichkeit* are used, or a variety of other terms, cf. ibid. 7 and Guido Isekenmeier, "In Richtung einer Theorie der Interpiktorialität," in: ibid., 11–86, esp. 14, fn. 10. In a medieval context, Cynthia Hahn in particular has promoted the concept of 'interpictoriality' analogous to 'intertextuality', specifically in her work on hagiographies; cf. Cynthia Hahn, "Interpictoriality in the Limoges Chasses of Stephen, Martial, and Valerie," in: *Image and Belief: Studies in Celebration of the Eightieth Anniversary of the Index of Christian Art*, ed. by Colum Hourihane, Princeton: Princeton University Press, 1999, 109–124, and Cynthia Hahn, *Portrayed on the Heart: Narrative Effect in Pictorial Lives of Saints from the Tenth through the Thirteenth Century*, Berkeley [et al.]: University of California Press, 2001.

33 Medieval reference systems – as a way of ordering and communicating knowledge – are inevitably incredibly complex. Some indication for this can be found in the interdisciplinary volume Sabine Griese and Claudine Moulin (Eds.), *Verweiskulturen des Mittelalters*, Wolfenbüttel: Herzog August Bibliothek, 2022, and the 2015 conference on which it was based, cf. the respective programme under <https://www.hab.de/mediaevistischer-arbeitskreis/> (accessed 13 June 2023).

are, precisely for this reason, not *representations* of a work they have been inspired by or that they may be said to have inspired.

It might be best to specify what I mean. Around 1235–1250, accounting for several stages of revision, a Franciscan known as Alexander Minorita[34] wrote a commentary on the biblical *Book of Revelation*, his *Expositio in Apocalypsim*.[35] This commentary was accompanied by a picture programme that has survived in several manuscripts. **FIGS. 13** and **14** show a direct comparison of one 'scene' depicted in two different manuscripts of the work, viz. 'a picture' of Domitian (51–96 AD) persecuting Christians – note that in the Cambridge manuscript in **FIG. 14**, the head of a Jewish figure, identifiable by the distinctive hat, *pileus cornutus*, has been added (cf. next to the stretched-out hand of Domitian on his horse), indicating the persecution of not only Christians but also Jewish

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34 Sometimes referred to as Alexander of Bremen in older literature. Also referred to as such in the description of MS Mm.5.31 at the Cambridge University Library, cf. <http://cudl.lib.cam.ac.uk/view/MS-MM-00005-00031/1> (accessed 11 March 2023).

35 For information on this work in general, see Felicitas Schmieder, "Die Johannesoffenbarung als Schlüssel zur Zeitgeschichte – Alexander Minoritas ‚Expositio in Apocalypsim' als Chronik," in: *Geschichte vom Ende her denken: Endzeitentwürfe und ihre Historisierung im Mittelalter* (Forum Mittelalter – Studien; vol. 15), ed. by Susanne Ehrich and Andrea Worm, Regensburg: Schnell & Steiner, 2019, 127–145; Sabine Schmolinsky, "Wer wird das Himmlische Jerusalem erbauen? Interpretationen in der Apokalypsenexegese des Alexander Minorita," in: *Geschichte vom Ende her denken: Endzeitentwürfe und ihre Historisierung im Mittelalter* (Forum Mittelalter – Studien; vol. 15), ed. by Susanne Ehrich and Andrea Worm, Regensburg: Schnell & Steiner, 2019, 147–157; and Felicitas Schmieder, "Inscribing the Orient into a Historiography of the Past, Present, and Future of Latin Europe: Alexander Minorita's Expositio in Apocalipsim," in: *Collection de l'Ecole française de Rome* 554 (2019), 253–266. See also Sabine Schmolinsky, *Der Apokalypsenkommentar des Alexander Minorita: Zur frühen Rezeption Joachims von Fiore in Deutschland* (MGH Studien und Texte; vol. 3), Hannover: Hahn, 1991; Sabine Schmolinsky, "Merkmale der Exegese bei Alexander Minorita," in: *Neue Richtungen in der hoch- und spätmittelalterlichen Bibelexegese* (Schriften des Historischen Kollegs; vol. 32), ed. by Robert E. Lerner and Elisabeth Müller-Luckner, München: Oldenbourg, 1996, 139–148, online: <https://doi.org/10.1524/9783486595789-010>; David Burr, "Mendicant Readings of the Apocalypse," in: *The Apocalypse in the Middle Ages*, ed. by Richard Kenneth Emmerson and Bernard McGinn, Ithaca: Cornell University Press, 1992, 89–105, here 99f.; and Peter K. Klein, "Introduction: The Apocalypse in Medieval Art," in: *The Apocalypse in the Middle Ages*, ed. by Richard Kenneth Emmerson and Bernard McGinn, Ithaca: Cornell University Press, 1992, 159–199, here 192–194.

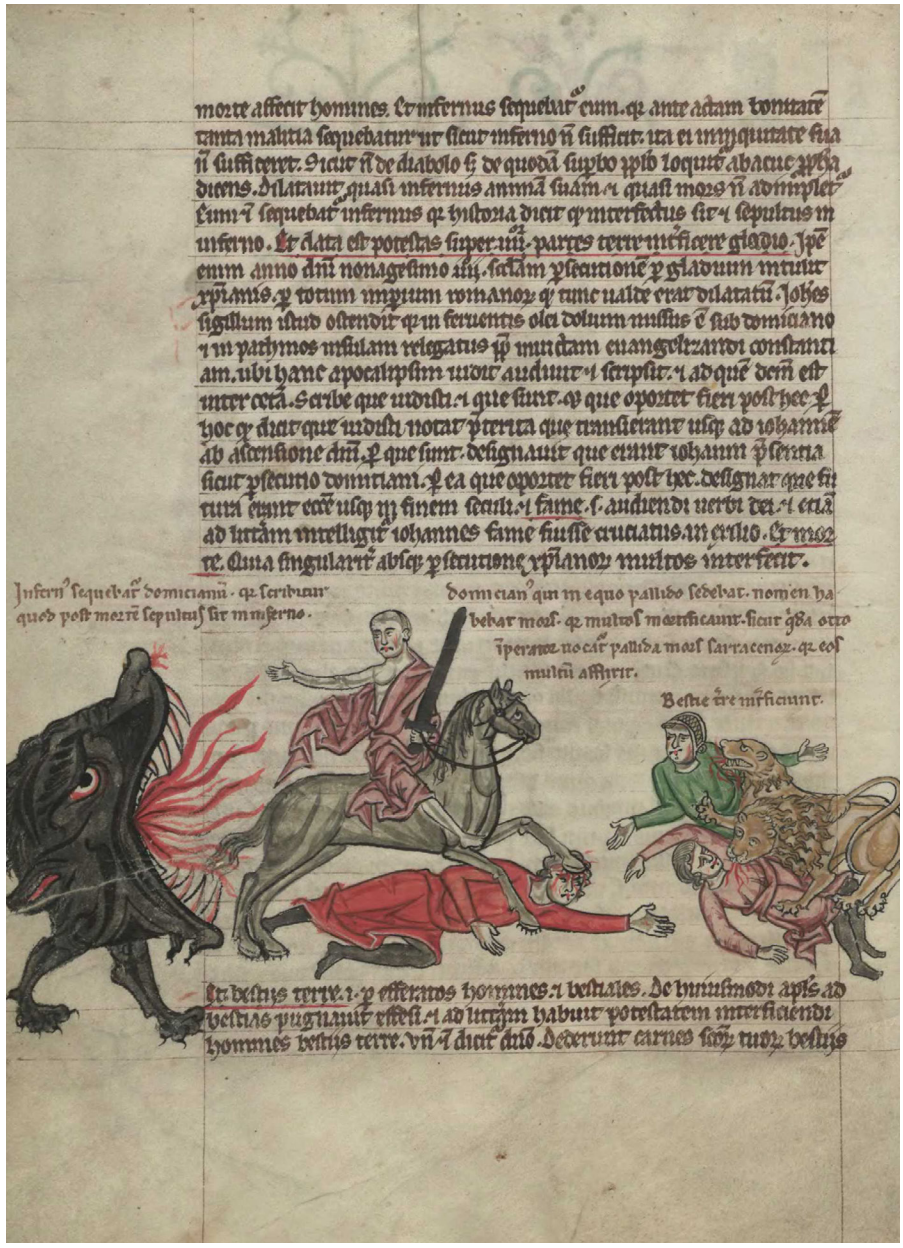


FIG. 13: Depiction of Domitian persecuting Christians as one of the four horsemen of the apocalypse in Alexander Minorita's *Expositio in Apocalypsim* in Wrocław University Library, MS I Q 19, after 1271, f. 27v, <https://www.bibliotekacyfrowa.pl/publication/63> (PD).



FIG. 14: Depiction of Domitian persecuting Christians and Jews as one of the four horsemen of the apocalypse in Alexander Minorita's *Expositio in Apocalypsim* in Cambridge University Library, MS Mm.5.31, c. 1270–1290, f. 27v, <https://cudl.lib.cam.ac.uk/view/MS-MM-00005-00031/58> (CC BY-NC 3.0).

people under Domitian's reign as described by Eusebius.[36] Here, we can already sense the subtle changes that may have occurred in the different 'iterations' of a picture programme, which, in this case, as is often the case, exhibits a proximity to a certain textual tradition of manuscript transmission that has led to it being regarded as part of the same 'work' rather than separate work expressions of the same motif; something to keep in mind as we continue our way through the maze of intermedial transmission variances.

Another example, to deepen complications (in the Latin sense of the word): Alexander Minorita makes recourse to Joachim of Fiore (c. 1130–1202),[37] an influential theological figure,[38] especially in the heretical circle of the Franciscan Spirituals that formed in consequence of the *Armutsstreit*[39] in the 13th century.[40] The aforementioned *Vaticinia de*

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36 It might also be a note of interest that the *Book of Revelation* is thought by most scholars to have been written towards the end of Domitian's reign, cf. Ulrike Riemer, "Domitian — (k)ein Christenverfolger?" in: *Zeitschrift für Religions- und Geistesgeschichte* 52/1 (2000), 75–80, here 75f. On the matter of Eusebius and Domitian, see Leonard L. Thompson, *The Book of Revelation: Apocalypse and Empire*, Oxford [et al.]: Oxford University Press, 1990, 136. On the iconography of the 'Jewish hat', see Naomi Lubrich, "The Wandering Hat: Iterations of the Medieval Jewish Pointed Cap," in: *Jewish History* 29/3-4 (2015), 203–244.

37 On the closeness of Alexander's Apocalypse commentary to the Joachitic tradition and its co-transmission with Joachitic and pseudo-Joachitic works, cf. Schmolinsky 1991, 20f., and Schmolinsky 2019, 150f. See also Marjorie Reeves and Beatrice Hirsch-Reich, "The Seven Seals in the Writings of Joachim of Fiore: With Special Reference to the Tract 'De Septem Sigillis'," in: *Recherches de théologie ancienne et médiévale* 21 (1954), 211–247, and Beatrice Hirsch-Reich, "Der Apokalypse-Kommentar des norddeutschen Minoriten Alexander," in: *Recherches de théologie ancienne et médiévale* 24 (1957), 361–364, here 361f.

38 On the figure of Joachim of Fiore, see the classic Herbert Grundmann, *Studien über Joachim von Floris* (Beiträge zur Kulturgeschichte des Mittelalters und der Renaissance; vol. 32), Leipzig [et al.]: Teubner, 1927; Matthias Riedl, *Joachim von Fiore: Denker der vollendeten Menschheit*, Würzburg: Königshausen & Neumann, 2004; Henning Ottmann, *Geschichte des politischen Denkens*, Stuttgart: J.B. Metzler, 2004, 118–128, online <https://doi.org/10.1007/978-3-476-02911-9_7>; Julia Eva Wannenmacher (Ed.), *Joachim of Fiore and the Influence of Inspiration: Essays in Memory of Marjorie E. Reeves (1905–2003)*, London: Routledge, 2013; and Matthias Riedl (Ed.), A *Companion to Joachim of Fiore* (Brill's Companions to the Christian Tradition; vol. 75), Leiden [et al.]: Brill, 2017.

39 A conflict within the Franciscan order about the principle of poverty; also referred to as the *usus pauper* controversy, cf. David Burr, *The Spiritual Franciscans: From Protest to Persecution in the Century After Saint Francis*, Pennsylvania State University Press, 2001, 137–144.

40 Cf. Matthias Riedl, "Longing for the Third Age: Revolutionary Joachism, Com-

summis pontificibus originated in the same milieu and were *ex post facto* attributed to Joachim, making them one of the many pseudo-Joachitic works that circulated at the time.[41] To be more precise, the *Vaticinia* are a combination of two series of pope prophecies with accompanying picture programme, created at different stages: the earlier *Genus nequam* series and the later *Ascende calve* series. In terms of intertextuality, this results in the interesting constellation that the author of yet another Joachitic work, the *Liber Horoscopus*, would seem to have been influenced by the *Genus nequam* prophecies while in turn influencing the *Ascende calve* series.[42] In the seventh prophecy of this latter series, Pope Benedict XI is referred to as *avis nigerrima, corvini generis*, "the blackest bird of the species of crow,"[43] due to a widespread propagandistic identification of the Dominican order with this imagery.[44] (And we find the *avis nigerrima* turn of phrase in the *Liber Horoscopus* as well.)[45] The crow is not only referenced in the text but depicted in the corresponding picture – albeit not in all witnesses. Curiously enough, some, such as CC Cim. 6 from Kremsmünster, replace the crow with a dove, the symbolic representation of the Franciscan order (see **FIGS. 15** and **16**). The motif of crows and doves also appears in other places of both picture series. In the second prophecy of the *Genus nequam* series, the Latin text references

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munism, and National Socialism," in: *A Companion to Joachim of Fiore* (Brill's Companions to the Christian Tradition; vol. 75), ed. by Matthias Riedl, Leiden [et al.]: Brill, 2017, 267–318, here 280f. See also the outdated but influential Marjorie Reeves, *The Influence of Prophecy in the Later Middle Ages: A Study in Joachimism*, Oxford: Clarendon Press, 1969.

41 Cf. Kaup 2003, 151 and 174, and Bernard McGinn, *Visions of the End: Apocalyptic Traditions in the Middle Ages*, New York [et al.]: Columbia University Press, 1979, 188f.

42 Cf. Kaup 2003, 169f.

43 Schwartz and Lerner 1994, 171. For the full transcription of the prophecy, cf. ibid., 189.

44 The crow was meant to be a symbolic representation of the Dominican order while the dove was meant to represent the Franciscan order – and it has indeed been argued that this central conflict lies "at the heart of the pictorial program" (Blumenfeld-Kosinski 2010, 169). Robert E. Lerner has analysed this particular iconography in Robert E. Lerner, "Ornithological Propaganda: The Fourteenth-Century Denigration of Dominicans," in: *Politische Reflexion in der Welt des späten Mittelalters / Political Thought in the Age of Scholasticism: Essays in Honour of Jürgen Miethke* (Studies in Medieval and Reformation Traditions; vol. 103), ed. by Martin Kaufhold, Leiden [et al.]: Brill, 2004, 171–191.

45 Cf. Kaup 2003, 170f.



FIG. 15: Detail from vaticinium VII of the *Ascende calve* prophecies, showing pope Benedict XI feeding a serpent with a crow behind him, c. 1360/1370; from VadSlg Ms. 342, Kantonsbibliothek, Vadianische Sammlung, St. Gallen, f. 7, <http://www.e-codices.ch/de/vad/0342/7> (CC BY-NC 4.0).



FIG. 16: Detail from vaticinium VII of the *Ascende calve* prophecies, showing pope Benedict XI with a serpent and a dove appearing behind him, c. 1410/1415; from CC Cim. 6, Stiftsbibliothek Kremsmünster, f. 4r (image courtesy of the Stiftsbibliothek Kremsmünster).



FIG. 17: Detail from vaticinium II of the *Genus nequam* series, showing a pope (possibly Martin IV) with a serpent and two crows, 14th century; from MS 404, Corpus Christi College, Cambridge, f. 88v, <https://parker.stanford.edu/parker/catalog/jy663fr8353> (The Parker Library, CC BY-NC 4.0).



FIG. 18: Detail from vaticinium II of the *Genus nequam* series, showing a pope (possibly Martin IV) with a serpent and a crow, 15th century; from Latin 10834, Bibliothèque nationale de France, Paris, f. 7v, <https://gallica.bnf.fr/ark:/12148/btv1b84527986> (PD).

ravens and the depiction typically shows one or two of them, sometimes engaged in a fight with a serpent (see **FIGS. 17** and **18**).[46] Martha H. Fleming notes in her *apparatus criticus* of this depiction in her printed edition:

> **bird**: two *corvis* attacking serpent's eyes A, two birds attacking serpent's head CDF, two birds resting atop tree, facing pope M, one bird attacking serpent's head P, *om*. attack, bird on opposite side atop staff, beak open, parallel to pope's head V.[47]

This might begin to indicate the type of variance that we can encounter with these multi-transmitted picture programmes. At least one coloured edition of the 16th century Protestant appropriation retains the raven and the fight (see **FIG. 19**) but renders it a peculiar visual by combining it with the commentary by Osiander which suggests that the image depicts the 'holy spirit' in a fight with the devil.[48] This reconfigured pairing only appears plausible in the non-coloured copies of this printed work that feature a non-specified bird which may well be a dove (see **FIG. 20**). Yet another coloured edition epitomizes the indecision: It looks as though the bird may be both black and white, with the lighter colour not quite covering the other (see **FIG. 21**). How to account for this ambiguity in a description aiming to be precise? We could, of course, retreat to the higher category of avian classification or categorize our levels of (un)certainty. This, however, already goes to the heart of what we describe and ascribe – meaning (interpretation, identification)? Appearance (properties, values, attributes)? Both? And what about points of reference? Spatial or otherwise?

The ornithological example is but a very small variance in a sea of substitutions, additions, deletions, and transformations of 'elements' within an otherwise relatively stable, contiguous picture(s) work. Disentangling this evolution requires a separation and highlighting

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46 "Et niger totus privatus lumine a corvis manifestans tempus." (Fleming 1999, 153.)
47 Fleming 1999, 152.
48 Cf. "hie streitet der heylige Geyst mit dem Teuffel" (Andreas Osiander, *Ein wunderliche weissagung, von dem Bapstum: wie es yhm bis an das ende der Welt gehen sol, ynn figuren odder gemelde begriffen*, Zwickau: Kantz, 1527, 19).



FIG. 19: Detail from vaticinium II of the *Genus nequam* series; from Osiander 1527, VD16 W 4645, Bayerische Staatsbibliothek, München, f. 11r, <https://mdz-nbn-resolving.de/urn:nbn:de:bvb:12-bsb00053611-6> (CC BY-NC-SA 4.0).



FIG. 20: Detail from vaticinium II of the *Genus nequam* series; from Osiander 1527, VD16 W 4644, Bayerische Staatsbibliothek, München, f. 11r, <https://mdz-nbn-resolving.de/urn:nbn:de:bvb:12-bsb00026119-8> (CC BY-NC-SA 4.0).



FIG. 21: Detail from vaticinium II of the *Genus nequam* series; from Osiander 1527, VD16 W 4642, Taylor Institution Library, Bodleian Libraries, University of Oxford, f. c3r, <https://editions.mml.ox.ac.uk/editions/weyssagung/#c3r> (CC BY-NC-ND 4.0); the digital presentation of this print was created by Huber Digital for Taylor Editions at the University of Oxford and published in 2015, with the transcription encoded in TEI/XML by Kezia Fender.

of details as Hélène Millet showed in her excellent study of the pope prophecies where she employed tables as a means of comparison (see **FIG. 22**).[49] Generally speaking, some variances in the transmission of picture programmes may be negligible, incidental, accidental; as always, their significance and variability (or lack thereof) can only reveal itself through an observation of relations and it is those relations that we seek to record. Should we also record matters of reasoning, beyond matters of 'finding' (*Befund*)? It seems to me that we should, but one cannot say that we do, in the digital humanities as such.

Even the matter of finding, that is, the matter of a *system* of finding, is made complex by the permeation of intermediality. We can take this further and look beyond manuscripts. It has been said, for example, that the picture programme of Alexander's *Expositio* served as a template for the picture panels that Master Bertram von Minden painted on an altarpiece around 1400.[50] Furthermore, it has been stated that it may have influenced Albrecht Dürer's *Apocalypsis cum Figuris* (1498).[51] The *Expositio in Apocalypsim* picture programme itself seems to be related to an 'English-French' group of illustrated Apocalypse manuscripts, rooted

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49 Cf. Millet 2004, 48, 50 for one way of highlighting details (lowering the opacity of other parts of the image) and 120–124 for a tabular comparison of details in order to showcase the origin of archetypical elements of the picture programme.

50 And for a view of which I must redirect to the Victoria and Albert Museum, London, accession number 5940-1859: <https://collections.vam.ac.uk/item/O89176/altarpiece-with-45-scenes-of-altarpiece-master-bertram/> (accessed 11 March 2023). The Victoria and Albert Museum gives the date of creation as c. 1400 – Andrea Worm dates it more specifically into the 1370s and 1380s, cf. Andrea Worm, "Per omnia saecula saeculorum: Alexander Minoritas Apokalypse-Kommentar und ein Retabel aus der Werkstatt Meister Bertrams in London," in: *Geschichte vom Ende her denken: Endzeitentwürfe und ihre Historisierung im Mittelalter*, ed. by Susanne Ehrich and Andrea Worm (Forum Mittelalter – Studien; vol. 15), Regensburg: Schnell & Steiner, 2019, 159–188, here 160. See also Alois Wachtel (Ed.), *Alexander Minorita: Expositio in Apocalysim* (MGH Quellen zur Geistesgeschichte des Mittelalters; vol. 1), Weimar: Böhlau, 1955, XLV.

51 Cf. ibid. and Wilhelm Neuß, "Die ikonographischen Wurzeln von Dürers Apokalypse," in: *Volkstum und Kulturpolitik: Sammlung von Aufsätzen, gewidmet Georg Schreiber zum 50. Geburtstage*, ed. by Heinrich Konen and Johann Peter Steffes, Köln: Gilde, 1932, 185–197. On the topic of Dürer's Apocalypse cycle and the different manuscript traditions that may have influenced it, see furthermore Erwin Panofsky, *The Life and Art of Albrecht Dürer*, Princeton: Princeton University Press, [4]1955, 51–59 [originally published in three volumes in 1943].

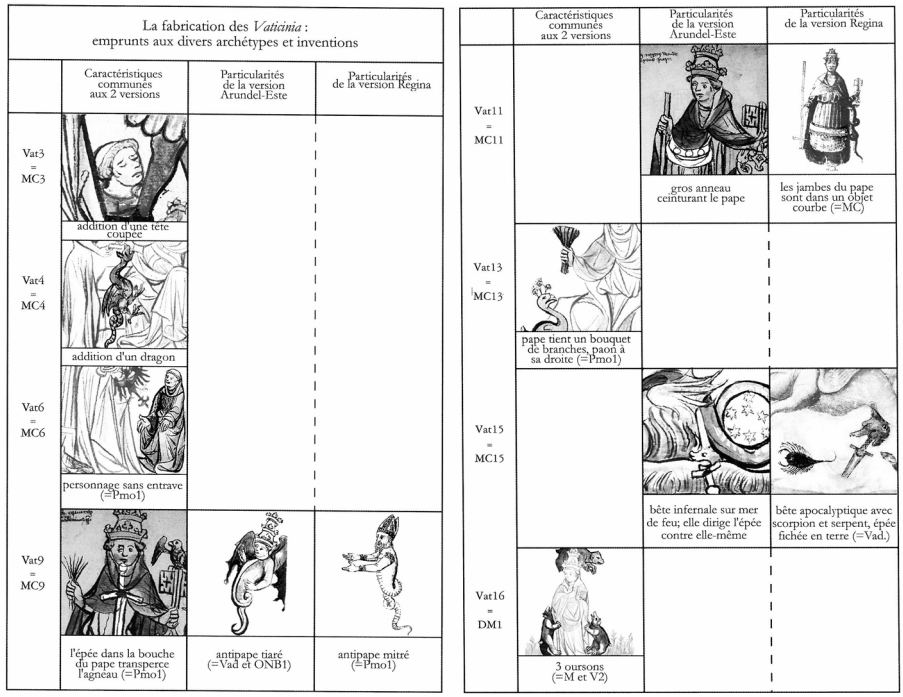


FIG. 22: Table with characteristics of *Vaticinia* versions; from Hélène Millet, *Les successeurs du pape aux ours: Histoire d'un livre prophétique médiéval illustré* (Vaticinia de summis pontificibus), Turnhout: Brepols, 2004, 120f.

in an Italian tradition, as well as the Spanish *Beatus* cycle.[52] Indeed, in at least one composite manuscript Alexander's commentary is transmitted alongside the pope prophecies of the *Vatinica de summis pontificibus*.[53] This is to be expected, given the (pseudo-)Joachitic milieu that evidently gave rise to many of the immediate examples of multi-transmitted picture works that come to mind.

52 Cf. Neuß 1932, 187–190, und Max Huggler, "Der Bilderkreis in den Handschriften der Alexander-Apokalypse," in: *Antonianum* 9 (1934), 85–150 and 269–308, here esp. 276f.

53 Cf. Worm 2019, cf. 170f., fn. 29. The manuscript in question is the Cod. Vat. lat. 3819 from the Biblioteca Apostolica Vaticana, Rome, online: <https://digi.vatlib.it/mss/detail/Vat.lat.3819> (accessed 11 March 2023).

C.
DIAGRAMMATIC REASONING

At this point I wish to digress briefly and dedicate a few words to a pictorial phenomenon that is not exclusive to the 12th century but gained traction at the time as well as later in the 13th and 14th century within the milieu that we were just familiarizing ourselves with; a phenomenon that is furthermore of interest for issues of modelling and graphical variety: the emergence of widespread diagrammatic knowledge representations (see **FIG. 23**).[54] Fritz Saxl's verdict that "[t]he 12th century did not invent the idea of representing a group of abstract notions in diagramatic [sic!] form; but [that] it was not until then that this device played so considerable a part"[55] still rings true[56] and has to be seen in the context of the changes that the function of books and their design went through in the late 12th and early 13th century in general.[57] Of the many aspects that we could single out, there is one that we should, if not discuss, at

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54 In addition to the literature already named in **CHAPTER II**, section A. 'Models in Science', see also Jeffrey F. Hamburger, "Mindmapping: The Diagram as Paradigm in Medieval Art – and Beyond," in: *The Visualization of Knowledge in Medieval and Early Modern Europe* (Studies in the Visual Cultures of the Middle Ages; vol. 16), ed. by Marcia Kupfer, Adam S. Cohen and Jeffrey Howard Chajes, Turnhout: Brepols, 2020, 61–86; Madeline H. Caviness, "Templates for Knowledge: Geometric Ordering of the Built Environment, Monumental Decoration, and Illuminated Page," in: *The Visualization of Knowledge in Medieval and Early Modern Europe* (Studies in the Visual Cultures of the Middle Ages; vol. 16), ed. by Marcia Kupfer, Adam S. Cohen and Jeffrey Howard Chajes, Turnhout: Brepols, 2020, 405–428; and that collected volume in general. With regard to the 12th century in particular, see Christel Meier, "Malerei des Unsichtbaren: Über den Zusammenhang von Erkenntnistheorie und Bildstruktur im Mittelalter," in: *Text und Bild, Bild und Text: DFG-Symposion 1988*, ed. by Wolfgang Harms, Stuttgart: J.B. Metzler, 1990, 35–65, and Christel Meier, "Die Quadratur des Kreises: Die Diagrammatik des 12. Jahrhunderts als symbolische Denk- und Darstellungsform," in: *Die Bildwelte der Diagramme Joachims von Fiore: Zur Medialität religiös-politischer Programme im Mittelalter*, ed. by Alexander Patschovsky, Ostfildern: Thorbecke, 2003, 23–53.
55 Fritz Saxl, "A Spiritual Encyclopaedia of the Later Middle Ages," in: *Journal of the Warburg and Courtauld Institutes* 5 (1942), 82–134 [134–142 appendices by Otto Kurz], here 107.
56 Adam Cohen would seem to agree with that assessment, cf. Cohen 2020, 385.
57 Cf. Christel Meier, "Bilder der Wissenschaft: Die Illustration des 'Speculum maius' von Vinzenz von Beauvais im enzyklopädischen Kontext," in: *Frühmittelalterliche Studien* 33/1 (1999), 252–286, here 252, online: <https://doi.org/10.1515/9783110242317.252>.

least mention, and that is the aspect of semiotics, since it ties into issues of interpictoriality.

Generally, when one turns to diagrammatic representations – and remember that models themselves may be depicted thus –, Charles Sanders Peirce (1839–1914) will be referenced at some point and the language will become one of icon, index, symbol, iconicity, and so forth.[58] Therefore, a word of acknowledgement might be in order: It is, of course, entirely possible to think of pictoriality and thereby interpictoriality in terms of *the shape* that they take and it is also reasonable to assume that that will have an impact on how these shapes may be *represented*. If we were to entertain the scholarly edition of diagrammatic depictions, considerations like that would likely have to be at the centre of study. It is, furthermore, entirely understandable that modelling discourses will veer in that direction, given the proximity between the representation of a model and that which it represents. Nevertheless, while it might be tempting to conflate the conversations about that which we speak about and that which we speak about by speaking about how we speak about it – or to regard them as inextricably linked –, we may do well to keep ourselves from getting lost in this maze by minding the words of semiotician Göran Sonesson:

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58 See, for example, Steffen Bogen and Felix Thürlemann, "Jenseits der Opposition von Text und Bild: Überlegungen zu einer Theorie des Diagramms und des Diagrammatischen," in: *Die Bildwelte der Diagramme Joachims von Fiore: Zur Medialität religiös-politischer Programme im Mittelalter*, ed. by Alexander Patschovsky, Ostfildern: Thorbecke, 2003, 1–22, or, outside of a strictly diagrammatic focus, George Bornstein and Theresa Lynn Tinkle (Eds.), *The Iconic Page in Manuscript, Print, and Digital Culture*, Ann Arbor: University of Michigan Press, 1998, and Beatrice Kitzinger, "Framing the Gospels, c. 1000: Iconicity, Textuality, and Knowledge," in: *The Visualization of Knowledge in Medieval and Early Modern Europe* (Studies in the Visual Cultures of the Middle Ages; vol. 16), ed. by Marcia Kupfer, Adam S. Cohen and Jeffrey Howard Chajes, Turnhout: Brepols, 2020, 87–114. Peirce has also been connected to Panofsky in Tullio Viola, "Peirce and Iconology: Habitus, Embodiment, and the Analogy between Philosophy and Architecture," in: *European Journal of Pragmatism and American Philosophy* 4/1 (2012), online: <https://doi.org/10.4000/ejpap.764>. In a context of modelling in the digital humanities, see Claas Lattmann, "Iconizing the Digital Humanities: Models and Modeling from a Semiotic Perspective," in: *Historical Social Research* suppl. 31 (2018), 124–146, online: <https://doi.org/10.12759/hsr.suppl.31.2018.124-146>, and Christina Ljungberg, "Iconicity in Cognition and Communication," in: *Historical Social Research* suppl. 31 (2018), 66–77, online: <https://doi.org/10.12759/hsr.suppl.31.2018.66-77>.

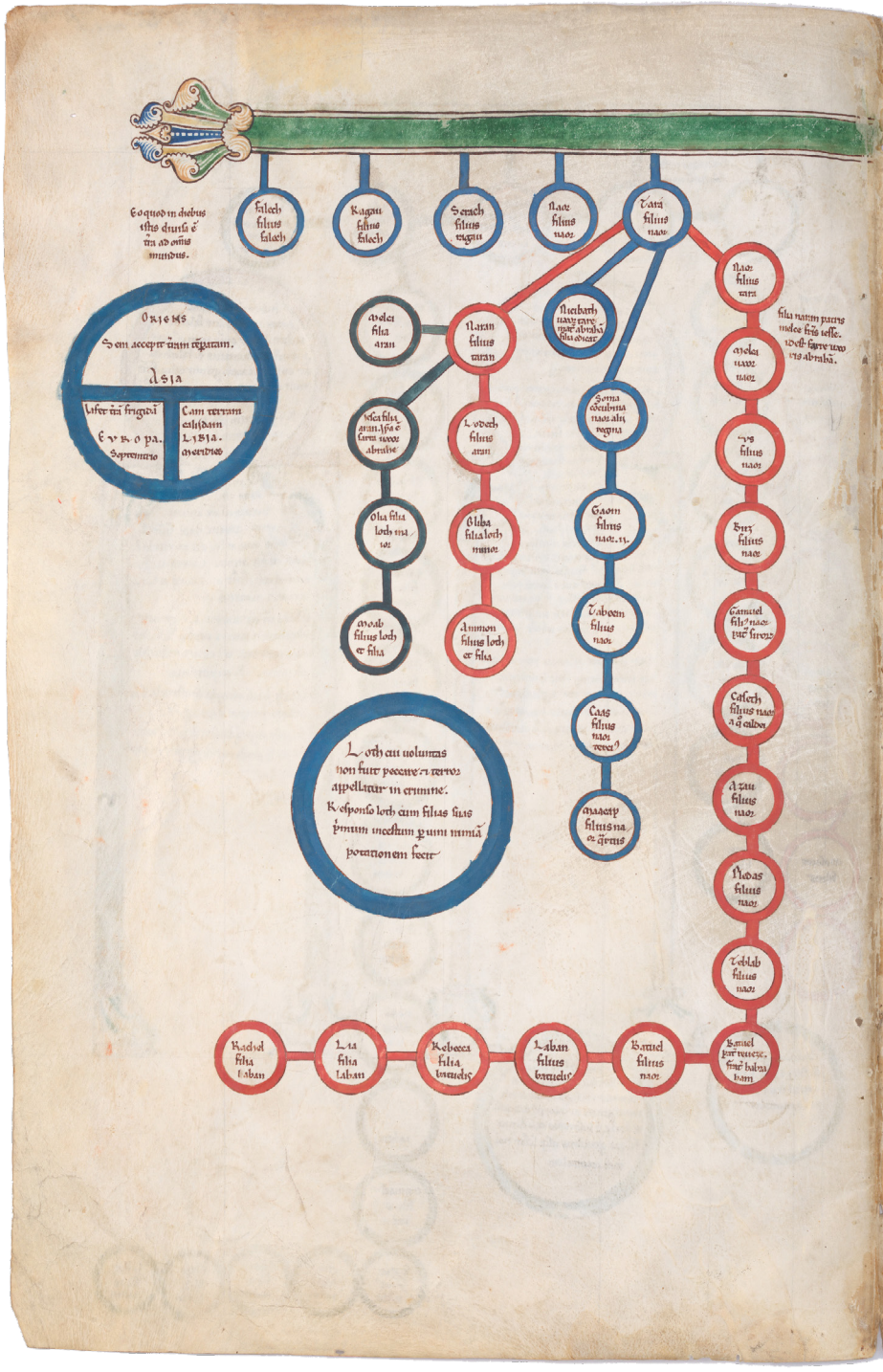

Oxus
Sem accepit ānam regionem.
Asia
Liber nā frigiā
Eu. o pa.
Supremario
Cam terram
calsdam
Libia.
averdias
Loth cū uoluntas
non fuit peccare a terro
appellatur in crimine.
Responso loth cum filias suis
primum incestum quum nimiā
potationem fecer
Rachel filia Laban
Lia filia Laban
Rebecca filia bauuele
Laban filius bauuele
Bauuel filius nacr
Bauuel pr' rebecce, fuit habitator
Caleb filius nacr a q' calbon
Aziu filius nacr
Nadas filius nacr
Teblab filius nacr
Thaor filius tare
Tare filius nacr
Nacr filius sarug
Sarug filius ragau
Ragau filius faleh
Faleh filius heber
Eo quod in diebus
ipius diuisa é
tra ad omnē
mundū.
filia natum patris
nolce fuis esse.
uoll fuere uxo
res abrahā.
Nacr filius tare
Nachorh uxor tare
pr' abrahā
filia eius
Aydei
filia
aran
Aydei uxor
nacr
Aran
filius
tare
Ydea filia
aran sra e
tara uxor
abrahe
Loth filius
aran
Oba filia
loth ma
or
Gliba
filia loth
minor
Moab
filius loth
ex filia
Ammon
filius loth
ex filia
Sema
cubitus
nacr alij
regni
Gaom
filius
nacr. 11.
Tabeem
filius
nacr
Cas
filius
nacr
recci
Amaray
filius na
ex ancis



FIG. 23: Bifolium from a disassembled *Beatus* manuscript, showing the genealogy of Christ, c. 1180; from the Metropolitan Museum of Art, New York, 1991.232.2a-d, <https://www.metmuseum.org/art/collection/search/466197> (PD).

> Although semiotics is often taken to be the study of signs, the notion of sign itself, strange to say, is never defined. It is true of both the main traditions of semiotics, the Saussurean and the Peircean one, that they have never really offered any definition of the sign. When Peirceans and Saussureans quarrel over the presence of two or three entities in the sign, they never pause to ask themselves what kind of objects, defined by what type of features, are involved: but, clearly, before we know what we are counting, it makes no sense to start counting at all.[59]

A habit of counting could be useful if we were to consider the mnemotechnic function of picture programmes[60] but it seems like an ill-suited strategy for making structural sense of pictorial transmission variance; and that is not only true for pictures or picture programmes but also for medieval diagrams.

One reason to draw attention to diagrammatic depictions is that they were often transmitted alongside the textual work, meaning that they are often multi-transmitted similar to the picture programmes that I have mentioned thus far; aside from eschatological diagrams like those by Joachim of Fiore one might think of astronomical works such as *De sphaera mundi* (c. 1230) by Johannes de Sacrobosco, for example.[61]

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59 Göran Sonesson, "The Foundation of Cognitive Semiotics in the Phenomenology of Signs and Meanings," in: *Intellectica* 58 (2012), 207–239, here 220. It should be noted that Sonesson has been especially engaged in the field of pictorial and visual semiotics which is, by its very nature, a structuralist approach to image analysis, a "science of depiction" (Göran Sonesson, "On Pictorality: The Impact of the Perceptual Model in the Development of Pictorial Semiotics," in: *Advances in Visual Semiotics* (Approaches to Semiotics; vol. 118), Berlin / New York: Mouton de Gruyter, 1994, 67–108, here 68). If one were keen on developing an editorial theory pertaining to certain types of diagrammatic depiction, they could take Sonesson's school of semiotics into account. Since pictorial semiotics do not offer much in the way of describing, let alone understanding, the representation of meaning in the kind of historical works we are concerned with, however, the writings from this field will not be taken into further consideration in the present context.

60 On this interesting phenomenon where, in the case of picture bibles, elements in the pictures were actually numbered, see Susanne Rischpler, *Biblia sacra figuris expressa: Mnemotechnische Bilderbibeln des 15. Jahrhunderts* (Wissensliteratur im Mittelalter; vol. 36), Wiesbaden: Reichert, 2001.

61 Aylin Malcolm has presented the first study of MS Codex 1881 (University of Pennsylvania), one of the witnesses of this widespread work, suggesting that a comprehensive and comparative study of its diagrammatic programme is still a desideratum;

Preliminary autopsy would suggest that multi-transmitted diagrams might not have been subject to quite as much variance in transmission as other types of pictorial programmes, perhaps due to being easier to copy vis-à-vis their schematic nature or because they were explicit knowledge representations and changing them would have more obviously distorted an intended meaning and educational purpose; however, that observation is in need of a more comprehensive study and comparison.

Another reason why diagrammatic depictions are of interest is the way in which they are entwined with other multi-transmitted picture programmes. As Bruno Reudenbach has pointed out in his discussion of the *Biblia pauperum* – and this is where we return to that particular example –, early Christian Bible illustrations that predate the *Biblia pauperum* and are extant in only a small number "surprisingly often [contain] diagrammatic pictures."[62] And while he does acknowledge that those depictions might, at first, seem irrelevant for the "visual constitution"[63] of the *Biblia pauperum*, he connects them to his analysis of earlier di-

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see Aylin Malcolm, "In the Orbit of the Sphere: Sacrobosco's De sphaera mundi in UPenn MS Codex 1881," in: *Manuscript Studies* 5/1 (2020), 181–202, online: <https://doi.org/10.1353/mns.2020.0012>. Furthermore, Malcolm has been working on a digital edition of the manuscript's diagrams (cf. ibid.), underlining that the (digital) edition and presentation of the diagrammatic components of the work is equally of interest as the edition of other pictorial elements in manuscripts. See furthermore Owen Gingrich, "Sacrobosco Illustrated," in: *Between Demonstration and Imagination: Essays in the History of Science and Philosophy Presented to John D. North*, ed. by Lodi Nauta and Arie Vanderjagt, Leiden [et al.]: Brill, 1999, 211–224 (which is concerned with illustrations in the printed editions however); Kathrin Müller, "Formen des Anfangs: Sphärendiagramme aus dem 13. Jahrhundert," in: *Diagramme und bildtextile Ordnungen* (Bildwelten des Wissens: Kunsthistorisches Jahrbuch für Bildkritik; vol. 3,1), ed. by Birgit Schneider, Berlin: Akademie-Verlag, 2005, 85–96; and Kathrin Müller, *Visuelle Weltaneignung: Astronomische und kosmologische Diagramme in Handschriften des Mittelalters*, Göttingen: Vandenhoeck & Ruprecht, 2008, 203–252.

62 Bruno Reudenbach, "Heilsgeschichtliche Sukzession und typologische Synopse in Manuskripten der Biblia pauperum," in: *Studien zur Biblia pauperum* (Vestigia bibliae; vol. 34), ed. by Hanna Wimmer, Malena Ratzke and Bruno Reudenbach, Bern [et al.]: Peter Lang, 2016, 9–30, here 12, original (whole sentence): "Blickt man nun nochmals zurück auf die frühchristlichen Anfänge der Bildausstattung von Manuskripten mit biblischen Texten, dann zeigt sich, dass in der lückenhaften Überlieferung neben Bildern im Modus der Erzählung auch überraschend häufig diagrammatische Bilder vertreten sind, mit denen Einheit und Harmonie der biblischen Textkompilation ausgewiesen werden."

63 Ibid., 14, original: "visuelle Konstitution."

agrams by emphasizing the "continuously implemented diagrammatic layout [in which the manuscripts of the *Biblia pauperum*] combine biblical texts and images."[64]

Here, we have our first hint that the constitution of a picture programme through its layout – through its arrangement of texts and images on a manuscript page or across several pages – might have to be a point of comparison. Henrike Manuwald has pointed out that "not every text-image-combination is a diagram in the sense that its meaning derives from the arrangement of textual and pictorial elements."[65] At the same time, she acknowledges that there is an important "spatial dimension"[66] nonetheless. We tend to think of space in manuscripts in terms of *mise en page*.[67] The physical boundaries of parchment or paper, folded into quires and bound in a codex, dictate our understanding of directionality – how to structure content while laying it down as well as how to navigate it while reading and using the subsequent book. Diagrammatic works broaden this understanding since they commonly disrupt the conventions of division, seeking their own conventions at the edges of the realizable. We can see this, first and foremost, in their actual abdication of the codex format, sometimes opting for the scroll in order to move vertically. Such vertical knowledge organization requires vertical representation which is why these materials have already

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64 Reudenbach 2016, 14, original (whole sentence): "Doch sind die Manuskripte der *Biblia pauperum*, die in einem kontinuierlich durchgehaltenen diagrammatischen Layout biblische Texte und Bilder kombinieren, damit auch Teil biblischer Überlieferungs- und Illustrationsgeschichte."

65 Manuwald 2021, 203, original: "Nicht jede Text-Bild-Kombination wiederum ist ein Diagramm in der Weise, dass der Sinn von der Anordnung der Text- und Bildelemente abhängt."

66 Manuwald 2021, 203, original (whole sentence): "Jedoch ist die räumliche Dimension auch nicht zu vernachlässigen."

67 See, for example, Edgar Breitenbach, *Speculum humanae salvationis: Eine typengeschichtliche Untersuchung* (Studien zur deutschen Kunstgeschichte; vol. 272), Strasbourg: Heitz, 1930, 56–59, and Norbert H. Ott, "Mise en page: Zur ikonischen Struktur der Illustrationen von Thomasins ‚Welschem Gast'," in: *Beweglichkeit der Bilder: Text und Imagination in den illustrierten Handschriften des ‚Welschen Gastes' von Thomasin von Zerclaere* (Pictura et poesis; vol. 15), ed. by Horst Wenzel and Christina Lechtermann, Köln [et al.]: Böhlau, 2002, 33–64. See also, more generally on the topic as it pertains to medieval manuscripts, Henri-Jean Martin (Ed.), *Mise en page et mise en texte du livre manuscript*, Paris: Ed. du Cercle de la Librairie, 1990.

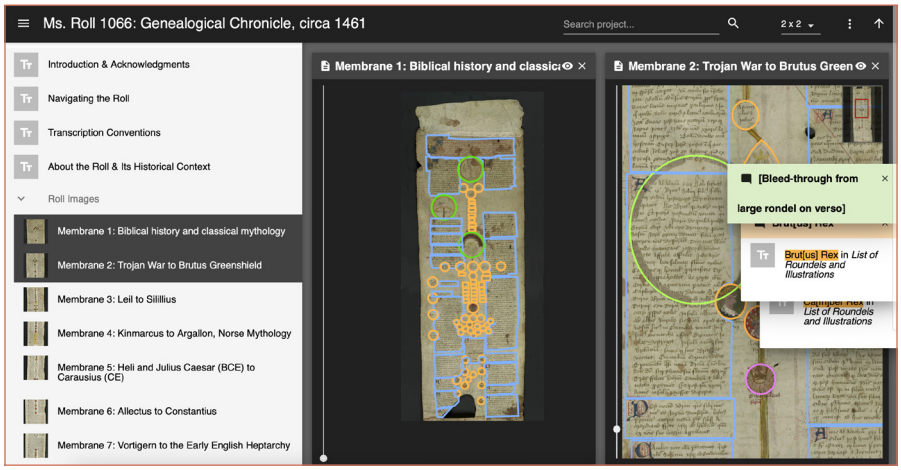


FIG. 24: Digital edition of Ms. Roll 1066 with multiple viewports and annotated membranes, <https://sims2.digitalmappa.org/120> (screen capture 12 August 2023).

attracted digital solutions; the digital edition of the Ms. Roll 1066 from the University of Pennsylvania (see **FIG. 24**),[68] Peter of Poitier's *Compendium historiae in genealogia Christi* which has survived in codices as well as in scrolls,[69] and the Jewish *Ilanot* tradition[70] come to mind, the latter two of which are at the forefront of digital editorial efforts under way at the time of writing this book. The dissolution of certain textual

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68 See *Ms. Codex 1066: Genealogical Chronicle of the Kings of England to Edward IV, circa 146*, ed. by Dot Porter [et al.], Schoenberg Institute for Manuscript Studies, University of Pennsylvania Libraries, 2012 [relaunch on Digital Mappa v.2 in 2022], <https://www.library.upenn.edu/exhibits/ms-roll-1066> (accessed 1 August 2023). Note, in the edition, how the roll is divided into membranes rather than pages (but that it is divided, nonetheless). See also Dot Porter, "A Roll May Scroll but It Is Not a Webpage: Issues of Presenting Pennsylvania, Penn Libraries, MS Roll 1066 in a Digital Environment," paper presented at the *International Medieval Congress*, Leeds, UK, 3–6 July 2023.

69 See the project *Geschichte als visuelles Konzept: Peter von Poitiers' Compendium historiae*, led by Patrick Sahle, Andrea Worm and Roman Bleier, University of Wuppertal, University of Tübingen, University of Graz, 2022–2025, <https://gepris.dfg.de/gepris/projekt/504265959> (accessed 1 August 2023). For an example of the work in a roll format, see Beinecke MS 1183, Yale University Library, <https://collections.library.yale.edu/catalog/15761199> (accessed 1 August 2023).

70 See *Maps of God* as part of the *Ilanot* project, led by J. H. Chajes, University of Haifa, State and University Library Göttingen, 2019–2024, <https://ilanot.org> (pre-alpha proof-of-concept portal, accessed 1 August 2023). See also <https://ilanot.haifa.ac.il/> (accessed 1 August 2023).

logistics in order to convey the depth of time and relationality suggests that there can be no general schema of organizational units for medieval manuscripts (let alone beyond) that could accommodate the individual expressions of information or translate them into structural templates. Our approach will, therefore, have to be a different one. Since the transmission of the individual works, varied as it is, would appear to be schematic in itself, however, to a certain degree, one wonders whether the meta-methodological contribution of digital humanities thought might lie in the abstraction of layers of structures rather than the abstraction of the structures themselves. If we take the *Speculum humanae salvationis*, for example, we might – if we familiarized ourselves sufficiently – develop a typology of page layouts.[71] If we were to do so, we would need to identify a purpose for such an effort, one that is inherently tied to the intent of edition. One might also think about the three-dimensional spatial representation of a manuscript and the meaning that could be derived from that. Any of those considerations should be prompted by the modelling of process rather than result. We will return to that idea towards the end of the chapter.

D.
BOUNDARIES OF INTERPICTORIALITY

To stay on the matter of diagrammatic works and their implications for interpictoriality, let us briefly return to the *Biblia pauperum*. Interestingly enough, Michael Thomas examined the interrelation of the *Biblia pauperum* with the *Speculum humanae salvationis* and the *Liber figurarum* by Joachim of Fiore where Joachim's eschatological theories are expressed in a series of diagrammatic depictions that combine geometric forms with complex pictorial elements (see **FIG. 25**; this work exists in

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71 Generally, considering the discussion of facsimile editions and its relevance for the topic of this book, it might be of interest that printed editions of manuscript witnesses of this work tend to include so-called facsimiles (in this case coloured figures within the confines of the overarching publication) due to the importance of the pictorial elements; cf. Niesner 1995, 399ff. [unpaginated], and Melinda Nielsen (Ed.), *An Illustrated Speculum Humanae Salvationis: Green Collection Ms 000321*, Leiden [et al.]: Brill, 2022, 365–473.



FIG. 25: Diagrammatic geneaological depiction in Joachim of Fiore's *Liber figurarum*, 12th century; from MS 255A, Corpus Christi College, Oxford, f. 10r, <https://digital.bodleian.ox.ac.uk/objects/4fb778ab-7a26-43f8-9a61-b1781dd47d3f/> (reproduced by permission of the President and Fellows of Corpus Christi College, Oxford).

variant manuscripts as well).[72] While the *Speculum humanae salvationis* is often assumed to have originated within the Dominican order, Thomas questioned this.[73] He stopped short of claiming that it originated in the Franciscan order but suggested, for example, that the featured imagery of the tree might have been intended as an allegory that was particularly common in Franciscan circles[74] and that the originator of the *Speculum* might have been Ubertino da Casale, one of the leaders of the Franciscan Spirituals who wrote a work called *Arbor vitae crucifixae Jesu*.[75] Whatever the case, it would appear that the Franciscan Spirituals did have a "preference for pictures over letters."[76] For a long time, speculation that the *Biblia pauperum* may have originated in a Franciscan context and that the *pauperum* was in reference to the *pauperes spiritu* – a theory already put forth in the early 19th century[77] – persisted as well,[78]

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72 See Michael Thomas, "Zur kulturgeschichtlichen Einordnung der Armenbibel mit ‚Speculum humanae salvationis' unter Berücksichtigung einer Darstellung des ‚Liber Figurarum' in der Joachim de Fiore-Handschrift der Sächsischen Landesbibliothek Dresden (Mscr. Dresden A 121)," in: *Archiv für Kulturgeschichte* 52/2 (1970), 192–225.
73 Cf. Thomas 1970, 203–209. See, for a critique of his theses in that regard and other regards, Niesner 1995, 13–20.
74 Cf. Thomas 1970, 215. Given Bonaventura's *Lignum vitae* (c. 1260), this would appear to hold some weight, but as has been shown, there are many more ways in which to interpret and explain this part of the iconography; see Susanne Wittekind, "Visualizing Salvation: The Role of Arboreal Imagery in the Speculum Humanae Salvationis (Kremsmünster, Library of the Convent, Cod. 243)," in: *The Tree: Symbol, Allegory, and Mnemonic Device in Medieval Art and Thought*, ed. by Pippa Salonius and Andrea Worm, Turnhout: Brepols, 2014, 117–142.
75 Cf. Thomas 1970, 194f., 201f., 205 and 218. For more on Ubertino da Casale, see Burr 2001 – he is referenced at length throughout but for information on his *Arbor vitae*, see 96–100.
76 Thomas 1970, 201, original (whole sentence): "Als möglicherweise eher franziskanisch könnte man die Bevorzugung des Bildes vor dem Buchstaben sehen; es dürfte darin auch eine Hervorhebung der kontemplativen Betrachtung vor der Schrift zum Ausdruck kommen."
77 See, for example, Friedrich Christian Wilhelm Jacobs, *Beiträge zur ältern Litteratur oder Merkwürdigkeiten der Herzogl. öffentlichen Bibliothek zu Gotha* (vol. 1), Leipzig: Dyk, 1835, 455f. See also [s.n.], "Holzschneidekunst: Ueber die sogenannte Biblia pauperum," in: *Morgenblatt für gebildete Stände* 14 (1830), 53f., and 15, 57–59.
78 Cf. Alfred Weckwerth, "Die Zweckbestimmung der Armenbibel und die Bedeutung ihres Namens," in: *Zeitschrift für Kirchengeschichte* 68 (1957), 225–258; see also Arthur M. Hind, *An Introduction to a History of Woodcut with A Detailed Survey of Work Done in the Fifteenth Century* (vol. 1), Boston: Houghton Mifflin, 1935, 230 [reprinted in London [et al.]: Dover, 1963] and Robert A. Koch, "Elijah the Prophet, Founder of the Carmelite Order," in: *Speculum* 34 (1959), 547–560, here 550.

although it has been dismissed for as long and might be put to rest.[79] Norbert Ott argues, most reliably and convincingly of all, that the *Biblia pauperum* originated among Benedictines or Augustinian canons, based on the regional origin of the earliest manuscripts in respective scriptoria in the early 14th century.[80] The purpose of recounting these scholarly debates is simple and rather divorced from any real interest in adjudication (sans the required expertise): When Elena Pierazzo and others state that "editions […] make a scholarly argument,"[81] they tend to refer to the particulars of a text and the readings of a text. What they might also mean, however, and what is surely meant in the present context, is the totality of assumptions informing the assertions made with and about a re-sourcing of cultural heritage (i.e. the creation of a (re-)source through representation; representation of a kind). Rarely do we consider issues of provenance as issues of 'data' rather than 'metadata' – something to be known within the resource rather than about a resource. And yet, the example of the *Ascende calve* pope prophecies and its symbolic configurations of Franciscan and Dominican conflict has already shown that the *situatedness* of a work – of a single witness, even, or a group of witnesses – will necessarily impact interpretative leaps across space and time. The *identification* of information is, in itself, the argument. The *variation* among those identifications is the complexity that

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79 If we regard the *Biblia pauperum* title as ahistorical, there is no sense in trying to find a historical root, cf. Berve 1969, 9 and Henry 1987, 18. Berve also theorizes that the title was taken from other works of the same title that were non-pictorial abbreviated summaries of the Bible and indeed intended for clerics who were either actually poor or *pauperes spiritu*, cf. ibid. 8. As for the lack of a common contemporary naming practice and the historicity of the *Biblia pauperum* title, Schmidt points out that it was used in at least one witness from the 14th century which might be a note of interest, cf. Schmidt 1959, 119.

80 Cf. Norbert H. Ott, 'Biblia pauperum (Nr. 16),' in: *Katalog der deutschsprachigen illustrierten Handschriften des Mittelalters* (vol. 2), init. by Hella Frühmorgen-Voss, cont. by Norbert H. Ott and Ulrike Bodemann, München: C. H. Beck, 1996, online: <http://kdih.badw.de/datenbank/stoffgruppe/16> (last changed 15 February 2023, accessed 11 March 2023). See also Gisela Plotzek-Wederhake and Günter Bernt, 'Biblia pauperum,' in: *Lexikon des Mittelalters* (vol. 2), Stuttgart: Metzler, 1983, cols. 109f.; here referencing the *LexMA Online* from Brepolis Medieval Encyclopaedias [citeable link not made available in the online version]. The circle of recipients for the works grouped as *Biblia pauperum* would appear to be unclear, cf. Henry 1987, 18.

81 Pierazzo 2016, 196.

will always re-confront us with the editorial decisions we have made (in identification, in the establishment of relation). Those decisions are key. They run contrary to the logic discovery systems would impose on us, drawing on shared categories, supposing a common framework of production, cataloguing, and interoperation. One would never find a mention of Nicolaus de Hanapis in pertinent scholarship about the *Biblia pauperum* as we have discussed that *Werkkomplex* ('work complex' or 'set of work(s)') so far, seeing as the concordance that he may or may not have produced in the 13th century bears little to no relation to it, other than the *Biblia pauperum* title, but that title is, of course, exactly the type of search string that would pull false witness upon witness into our orbit, were we to use, say, the IIIF collections search of *Biblissima* as indiscriminately as the promise of a global query across digitizations might suggest to us.[82] I only mention this since digital scholarly editions

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82 While presumably not an issue for scholars of a given matter, new pathways of discovery introduce new requirements of discernment, namely those trained on anything but said pathway of discovery. On the example of Nicolaus de Hanapis, a few more words: The *Biblia pauperum* nowadays attributed to Nicolaus de Hanapis (or Hannappes, a Dominican patriarch of Jerusalem who lived in the 13th century) is a Pseudo-Bonaventura since it used to be attributed to Bonaventura in the old literature – this already adds a layer of confusion that is not at all uncommon in medieval transmissions. However, some of the old literature is explicitly aware of Nicolaus de Hanapis' work and distinguishes it from an alleged *Biblia pauperum* by Bonaventura, making a potential misidentification all the more confusing; cf. Jacobs 1835, 91 and 455. As the older literature already noted, there appears to be little relation to the picture bibles and it seems, rather, that there was some confusion between Nicolaus' work circulated under the title *Liber de exemplis sacrae scripturae* or *Exempla sacrae scripturae* (apparently essentially identical to *Virtutum vitiorumque exempla* and other titles, small changes notwithstanding) and what was disseminated under the *Biblia pauperum* title and ascribed to Bonaventura, as Victor Scholderer demonstrated on the basis of the material in the British Museum in the 1930s, cf. Victor Scholderer, "The Virtutum Vitiorumque Exempla of Nicolaus Hanapus," in: *Gutenberg-Jahrbuch* 11 (1936), 61–62, and Victor Scholderer, "A Further Note on Nicolaus Hanapus," in: *Gutenberg-Jahrbuch* 14 (1939), 153–154. One version identified by Scholderer is identical to yet another work circulated under the name of yet another person, leading him to state, in his 1939 addition: "[T]he error has perpetuated itself through all the many subsequent editions, while an additional and almost inevitable error has created out of 'Frater N. de Ianua' a Frater Nicolaus de Janua, whose ghost has haunted not only the General Catalogue of the British Museum Library but more specialized bibliographies also." (Scholderer 1939, 153.) A curio from bibliographical history that seems all too familiar and underlines the great efforts undertaken by cataloguers and others. For examples of a *Biblia pauperum* attributed to Nicolaus de Hanapis, see the manuscript Clm 14099 at the Bayerische Staatsbibliothek

will – in the future, if not already – exist in an ecosystem beyond their own making and they will do so differently from a printed scholarly edition on a shelf. This is not a matter of authority and trust, at least not primarily, but it is a matter of boundaries. Where does the edition start, where does it end? The old question of purview. Lines can be drawn where there is no relation; however, what if there are relations?

As already mentioned, Michael Thomas sought to draw a line between the *Biblia pauperum* and *Liber figurarum* by Joachim of Fiore, specifically the latter's diagrammatic depiction of the vision of the prophet Ezekiel. Thomas alleged that its composition in manuscripts from around 1300 is reflected in a *Biblia pauperum* manuscript from the mid-14th century.[83] An interesting observation can be made here: The example that he gives of this visual compositional reference may also be linked to a glass window in the Canterbury Cathedral[84] – and when we trace this connection further, we can find that Avril Henry had already linked the *Biblia pauperum* to the stained glass of that cathedral although she did not explicitly mention this particular connection.[85] Henry notes that the earliest manuscripts of the *Biblia pauperum* "possibly influenced

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München which is dated to the second half of the 14th century and is catalogued as Nicolaus de Hanapis, *Liber de exemplis Sacrae Scripturae (Biblia pauperum)* [a microform reproduction has been digitized and is available online: <http://mdz-nbn-resolving.de/urn:nbn:de:bvb:12-bsb00035051-6>] and the incunabula J 135-136 from the Dombibliothek Freising which is catalogued as Nicolaus de Hanapis, *Biblia pauperum a domino Bonaventura edita*, Strasbourg: Johann Prüß, 1490, online: <http://mdz-nbn-resolving.de/urn:nbn:de:bvb:12-bsb00062350-6>. See also the transmission history of early printed versions of his works in the *Gesamtkatalog der Wiegendrucke*, vol. 16, M26421–M26459, online: <https://gesamtkatalogderwiegendrucke.de/docs/nicohan.htm> (last changed 9 May 2012, accessed 1 August 2023).

83 Cf. Thomas 1970, 211–213. It should be mentioned here that Thomas also attempted to link this vision from the *Liber figurarum* to the *Speculum humanae salvationis* in an argument that Manuela Niesner has pointed out to be flawed and untenable, cf. Niesner 1995, 17–19.

84 This link would perhaps appear tangential if it were based merely on visuals but the oculus shows the prophets Isaiah, Jeremiah, Ezekiel, and Daniel who "would have faced the four evangelists" of a counterpart oculus (Madeline H. Caviness, *The Windows of Christ Church Cathedral Canterbury* (Great Britain; vol. 2), London: Oxford University Press, 1981, 25–29, here 26). In the *Liber Figurarum*, the four evangelists are represented by their animal symbols, and they are, furthermore, associated allegorically with the aforementioned prophets by Joachim, cf. Thomas 1970, 212f.

85 Cf. Henry 1987, 12–14.

the Canterbury glass"[86] and that the glass from the 12th and 13th century "may be contemporary with *Biblia Pauperum* in its earliest manuscript form"[87] – but could it not also be the case that the glass was influenced by Joachim's *Liber figurarum* and that the *Biblia pauperum* may in turn have been influenced by the glass, just as well as it may have been influenced by the *Liber figurarum* itself? Either way, it would seem that this cross-contamination would merit closer inspection;[88] similar to the *Speculum humanae salvationis* where it was found that the pictures have links to stained glass in the Ebstdorf Abbey as well as to tapestry in the Wienhausen abbey and to ceiling paintings in a church in Enkhuizen,[89] to name only a few of such instances.[90]

Reiterating the nature of intermediality in medieval culture and communication serves well to illustrate the aforementioned "dominance of the images over the 'image' […] and of the contexts over the text."[91] Their distribution across materialities and modalities is why they have to be perceived in their structural order – their *Beziehungssinn* ('relational meaning'), as Kemp invokes in reference to Nietzsche.[92] For the pres-

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86 Ibid., 13.

87 Henry 1987, 13.

88 See also Madeline H. Caviness, "Biblical Stories in Windows: Were They Bibles for the Poor?" in: *The Bible in the Middle Ages: Its Influence on Literature and Art* (Medieval & Renaissance texts & studies; vol. 89), ed. by Bernard S. Levy, Binghamton, New York: Medieval & Renaissance Texts & Studies, 1992, 103–147.

89 Cf. Breitenbach 1930, 80–82.

90 In his KdiH entry on the *Biblia pauperum*, Ott emphasizes how the intermingled effects of the *Biblia pauperum* and the *Speculum humanae salvationis* on monumental art and architecture often cannot be clearly distinguished and lists even more examples, including stained glass windows at Hirsau abbey that are no longer extant, mural paintings in a number of different locations, some of which as far as Denmark, and so forth; underlining that typological text-image works had a visible impact on many other depictions in art (cf. Ott 1996). For a study of typological picture programmes in late medieval stained-glass depictions in the German-speaking regions, see Sabine Rehm, *Spiegel der Heilsgeschichte: Typologische Bildzyklen in der Glasmalerei des 14. bis 16. Jahrhunderts im deutschsprachigen Raum* (Europäische Hochschulschriften / 28; vol. 349), Frankfurt am Main [et al.]: Peter Lang, 1999.

91 Kemp 1994, 17.

92 Cf. ibid. For the original use of the term in Nietzsche's writing, see: "Ist nicht nothwendig Sinn aber Beziehungs-sinn und Perspektive?" (Friedrich Nietzsche, *Nachgelassene Fragmente*, 1885, cited from the *Digitale Kritische Gesamtausgabe* (eKGWB), published on the basis of the *Kritische Gesamtausgabe Werke*, ed. by Giorgio Colli and Mazzino Montinari, Berlin / New York: Walter de Gruyter, 1967–,

ent purpose of a scholarly edition, we are looking to draw boundaries within and through those relational meanings not for arbitrary but for practical reasons; and as with any scholarly edition, the limitation of the scope is a matter of definition. If the subjects of editions are seen as works and if the works in this case are seen as picture programmes, then they cannot be defined semiotically in the vein of Nelson Goodman; the "sameness of spelling"[93] that he identifies as a crucial attribute of textual works (erroneously or otherwise) must give way to something else. I am tempted to call this a 'sameness of context' – meaning that the *Speculum humanae salvationis* or the *Biblia pauperum* or the *Liber figurarum* are held together by, for example, (1) being transmitted in the same medium, e.g. manuscripts, (2) being transmitted alongside a certain text or a certain configuration of text, (3) being reproduced manually with the *intent* of reproduction – one might say, a 'reproduction as is' –, even if a certain degree of alteration is regarded as a permissible part of this reproduction, especially since alterations may occur involuntarily as a result of the production process or, from an archival perspective, matters such as physical decay. These criteria await further refinement and are merely meant to indicate limitations of scope. Even so, we find ourselves with a transmission variance *within* a specific set of boundaries as well as *beyond* that set of boundaries and this will be important going forward.

According to this preliminary definition, the pope prophecies that were reproduced in the 16th century in a different context from the original *Vaticinia de summis pontificibus* would not be a part of an edition of the latter, even if they merited mention as a closely related work. One can easily see, however, how the opposite might be argued; what is understood to be a different context or not is open to interpretation and consequently we see that, as always, the delineation of an edition's subject is entirely dependent on the person of the editor and their line of argument, an important part of which are, not least of all, the available resources. If one wants to show the transmission variance of pictorial

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and the *Nietzsche Briefwechsel Kritische Gesamtausgabe*, ed. by Paolo D'Iorio, Berlin / New York: Walter de Gruyter, 1975–, 2009-, NF-1885,2[77], online: <http://www.nietzschesource.org/#eKGWB/NF-1885,2[77]> (accessed 11 March 2023).)

93 Goodman ²1976, 115.

depictions, studying the picture programmes in *manuscripts* specifically would be an obvious place to start since it aligns with existing scholarship about textual transmission in manuscripts – if we recall Zumthor's work definition of the medieval work being "la collectivité des versions en manifestant la matérialité"[94] – and since those picture programmes are, by virtue, intent, and reach, sufficiently distinguishable from the many influences exerted on them and by them in different media; whether they would need to be modelled in relation to each other, however, should editions be made of all of them, is another question altogether.

E.
WEITZMANN AND THE ART OF CRITIQUE

Let us assume the editorial point of view that there is a pictorial transmission variance worth recording and that there is a distinction to be made between work witnesses and otherwise related instances of reproductive influence and confluence. To study the transmission variance of picture programmes in a systematic way, we might need a theory of *Bildkritik* ('picture criticism') analogous to the long-established practice of *Textkritik* ('text criticism'). It could be tempting to suppose that art history has not ventured in this direction and only spoken of *Bildkritik* – with the particular meaning of studying the transmission variance as one would who wanted to establish an *apparatus criticus* – in oblique terms. This is not so, and I thought it important to bridge these discourses if we are to proceed. While there is no editorial theory as such to rely on, as there is for other cultural goods, and while *Bildkritik* has been used to denote any and all critical analysis of pictorial material – of which there has been plenty, of course –,[95] one shadow looms large: that of Kurt Weitzmann (1904–1993).[96] Even though he did not intend his art-his-

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94 Zumthor 1972, 73.

95 See, as an example for this broad use of the term, the German art-historical yearbook / series of collected volumes *Bildwelten des Wissens: Kunsthistorisches Jahrbuch für Bildkritik*, ed. by Claudia Blümle, Horst Bredekamp and Matthias Bruhn; vol. 1,1 published in Berlin: Akademie-Verlag, 2003.

96 For biographical information on Kurt Weitzmann, see Ernst Kitzinger, "Kurt Weitzmann (7 March 1904–7 June 1993)," in: *Proceedings of the American Philosophical*

torical theories to be the foundation of editorial work and even though his school of thought has come under criticism in the last decades,[97] his writings are worthwhile where the topic at hand is concerned. That topic is not the topic of his expertise – Byzantine manuscript illustrations – but the topic of methodology: Any assessment of Weitzmann's specialized contributions notwithstanding, the interdisciplinary origin of his approach cannot be denied and seems timely again, if not in its impetus then in its radicality.[98] To understand this, we must understand what he took 'picture criticism' to be and we must, furthermore, understand why it was rejected by others later on. The abbreviated account: Weitzmann published the study that contained his oft-cited, albeit briefly sketched, methodological thoughts in 1947 and was, understandably so, leaning on and borrowing from a tradition of textual criticism that would be described as outmoded today.[99] His primary interest lay with the way in which illustrated codices might have evolved from earlier scroll illustrations; being hence concerned with reconstructing 'original' archetypes

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Society 139/2 (1995), 204–209, and Herbert L. Kessler, "Kurt Weitzmann: 1904–1993," in: *Dumbarton Oaks Papers* 47 (1993), xviii–xxiii.

97 Mary-Lyon Dolezal correctly identifies the issue of Weitzmann leaning on a state of the art in textual criticism at the time, inspired by projects of New Testament scholars, that was later abandoned for its philological failings whereas art historians continued to reproduce Weitzmann's methods without critical re-evaluation, cf. Mary-Lyon Dolezal, "The Elusive Quest for the 'Real Thing': The Chicago Lectionary Project Thirty Years on," in: *Gesta* 35/2 (1996), 128–141. See also Mary-Lyon Dolezal, "Manuscript Studies in the Twentieth Century: Kurt Weitzmann Reconsidered," in: *Byzantine and Modern Greek Studies* 22/1 (1998), 215–263, esp. 223–246 for the historical and educational background of Weitzmann's interest in and application of philologically influenced methodologies.

98 Dolezal credits Weitzmann's mentor Adolph Goldschmidt with giving him the formative freedom to pursue his own school of thought and Weitzmann himself emphasized in a tribute to Goldschmidt that Goldschmidt encouraged students to expand their topics, methods, and fields of study, cf. Dolezal 1998, 227f. The strongest influence on Weitzmann's specific interdisciplinary approach at the intersection of art history and philology may have been his working relationship with textual scholars from Chicago, cf. Dolezal 1998, 241–246. In his own writing, he states that his reference for the methodology of textual criticism was the edition of the New Testament in Greek by Westcott and Hort from 1882, cf. Kurt Weitzmann, *Illustrations in Roll and Codex: A Study of the Origin and Method of Text Illustration*, Princeton: Princeton University Press, 1947, 182, fn. 1.

99 Cf. the two previous footnotes. For Weitzmann's thoughts on 'The Relation Between Text Criticism and Picture Criticism', see Weitzmann 1947, 182–192.

from their derivates similar to the then-dominant philological desiderata.[100] He was, in fact, arguably advanced in comparison because he admitted that picture criticism could not hope to reconstruct "even a single picture of a large cycle in its absolute purity"[101] due to the "penetration of style into iconography"[102] – something that, in his view, set pictorial criticism apart from textual criticism:

> In miniatures, […] the content, or what is called the iconography and which is the equivalent of the readings of the text, is fused with the style, i.e. the element corresponding with palaeography, to form such a close artistic unit that the one cannot be considered apart from the other. To do so for methodical purposes always involves some act of violence. The intrusion of style leads to an inevitable alteration of some of the iconographic details in later copies of the archetype. As a result, certain features of the archetype can no longer be established by critical methods.[103]

Conversely, his assumption that textual criticism could produce 'pure archetypes' is very much a product of its time as is his "application of the term *error*"[104] – a term that he, again, discussed with more nuance in the context of picture criticism than in his reference to textual criticism, acknowledging the difficulty in determining the presence of 'errors' in pictorial evolutions while assuming "[a]n error in text criticism […] [to be] an absolute quantity."[105]

Picture criticism in a quasi-editorial sense has always remained strongly associated with Weitzmann and therefore with the philological terminology and concepts most common in the 19th to mid-20th century. John Lowden, an art historian who did not entirely agree with Weitzmann's

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100 For a contemporary review and summation of Weitzmann's study, see Adolf Katzenellenbogen, "Illustrations in Roll and Codex: A Study of the Origin and Method of Text Illustration by Kurt Weitzmann," review, in: *Speculum* 23/3 (1948), 513–520.
101 Weitzmann 1947, 182.
102 Ibid.
103 Weitzmann 1947, 182.
104 Ibid., 184.
105 Weitzmann 1947, 183.

approach, acknowledged in 1992 that textual criticism had changed over the course of the 20th century, but he did not suggest that picture criticism might be similarly updated and developed.[106]

Of interest, for our inquiry, is a specific article by Kari Kraus from 2013 which may have constituted the first foray into the redefinition of 'picture criticism' for contemporary purposes.[107] This attempt did not originate in the discipline of art history and was, in fact, published in the *Cambridge Companion to Textual Scholarship* which would make it seem uniquely pertinent in the present context. Kraus does indeed reference Weitzmann at the very beginning when she acknowledges that he coined the term 'picture criticism' but she also states that picture criticism is "a fledgling discipline"[108] which is at the very least curious in light of the decades-old productive period of Weitzmann and his followers in Princeton such as Herbert L. Kessler.[109] The explicit discontinuity of tradition may point towards a renewed interest in questions that ring familiar but are still awaiting a response:

> Is there anything predictable about the way pictures change after several cycles of copying? Have we evolved any methods for notating variants between two or more versions of a picture? Is it possible to try to recover a prototype of an earlier version of a picture from later iterations of it?[110]

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106 Cf. John Lowden, *The Octateuchs: A Study in Byzantine Manuscript Illustration*, Pennsylvania: Pennsylvania State University Press, 1992, 37. His reference to textual criticism is brief and only revolves around changed theories of scribal intention. Although he did not follow in Weitzmann's footsteps uncritically, he mirrored his approach to a certain degree by way of stemmatological inquiry.

107 See Kari Kraus, "Picture Criticism: Textual Studies and the Image," in: *The Cambridge Companion to Textual Scholarship*, ed. by Neil Fraistat and Julia Flanders, Cambridge: Cambridge University Press, 2013, 236–256, online: <https://doi.org/10.1017/CCO9781139044073.012>.

108 Ibid., 236.

109 See for this also Ioli Kalavrezou and Courtney Tomaselli, "The Study of Byzantine Illustrated Manuscripts since Kurt Weitzmann: Art Historical Methods and Approaches," in: *A Companion to Byzantine Illustrated Manuscripts*, ed. by Vasiliki Tsamakda, Leiden [et al.]: Brill, 2017, 23–34, here 25.

110 Kraus 2013, 236.

In this perspective, picture criticism "does for images what textual criticism has traditionally done for words, namely to provide an adequate scholarly framework for studying their reproduction, transmission, comparison, and – more controversially – their reconstruction."[111]

Kraus acknowledges the speculative nature of the undertaking, given that 'picture criticism' would not appear to be something that is consciously practiced (anymore) or in the process of becoming a practice (yet again).[112] This poses two issues, primarily, which are not alleviated by addressing only one or the other: firstly, that of a frame of reference, and secondly, that of a desideratum out of which such a project would arise. While Kraus contributes to the former, her exploration of the matter seems to be tethered to a general interest in the notational void at the heart of scholarly engagements with pictorial material rather than being rooted in a precise concern. Indeed, there is no such discussion that could be cited here. The debate about Nelson Goodman's aforementioned *allographic* versus *autographic* work definitions does not warrant repetition in that it does not illumine relevant multi-transmitted materials either, even if it does illumine transcriptional anxiety.[113] Kraus' main point of reference from art history is Erwin Panofsky's iconographic method,[114] although it is not clear what his three-tier approach towards the description and interpretation of images offers to the revival of 'picture criticism' in the Weitzmannian, i.e. genealogical, vein. One traces manifestation, the other origin. There is a relation here, one that Kraus rightly senses, but that relation is one of confusion since it intends to make sense of pictorial transmission variance in order to record it, supposing a divisibility of mathematical proximities and distances through distortions of shapes and other types of measurements;[115] whereas the comparisons that establish variants in editorial theory as such always emerge from a process of scholarly judgement and selection and must, if

111 Ibid.
112 Cf. Kraus 2013, 236.
113 Cf. ibid., 237.
114 Cf. Kraus 2013, 242.
115 Cf. ibid., 248–253.

we are to respect Weitzmann's instincts, do so even more acutely in the case of pictorial transmission.

One supposes that computational methods (adhering to their own logics) might aid in the collation of pictures and this is certainly even more true today than it was at the time the article was written, where awareness of the digital humanities already informed the argument.[116] As stated in **CHAPTER 1**, however, the first central question for a methodological grounding of editorial theory in a digital age is not one of automation (of processes, of steps in these processes) but of the relationship that scholarship has with the re-inscription of both scholarly assumptions and scholarly assertions, either of which may enter the edition at *some* stage of the process; the exact configuration of which is, naturally, dependent on available technologies and actual workflows that we should not attempt to divine or define on this foundational level. There is something about 'the digital age' that must have prompted the article by Kraus, and we can recognize that – that digitization brings pictures to the fore and that textual scholars feel in some way obliged to react. This would explain why the article was published in the *Cambridge Companion to Textual*

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116 Cf. Kraus 2013, 238f. and 254. As is common in the Anglophone discourse, the digital humanities are, in this instance, mostly treated as synonymous with the activities of English departments at universities in the USA. For more information on this, see, for example, Matthew G. Kirschenbaum, "What Is Digital Humanities and What's It Doing in English Departments?" in: *ADE Bulletin* 150 (2010), 55–61 [reprinted in *Defining Digital Humanities: A Reader*, ed. by Melissa Terras, Julianne Nyhan and Edward Vanhoutte, Farnham, Surrey [et al.]: Ashgate, 2013, 195–204]. It should be noted that this focus is neither quite accurate for the history of the digital humanities in the USA nor, of course, on a global scale. See, by way of example, the criticism levelled at the 'origin story' of humanities computing in publications such as Sharon M. Leon, "Complicating a 'Great Man' Narrative of Digital History in the United States," in: *Bodies of Information: Intersectional Feminism and Digital Humanities*, ed. by Elizabeth Losh and Jacqueline Wernimont, Minneapolis: University of Minnesota Press, 2018, 344–366, and, for the German context where historical studies played a pivotal role, Manfred Thaller, "Entzauberungen: Die Entwicklung einer fachspezifischen historischen Datenverarbeitung in der Bundesrepublik," in: *Historical Social Research* suppl. 29 (2017), 178–192, online: <https://doi.org/10.12759/hsr.suppl.29.2017.178-192> [originally published in *Die sogenannten Geisteswissenschaften: Innenansichten*, ed. by Wolfgang Prinz and Peter Weingart, Frankfurt am Main: Suhrkamp, 1990, 138–160].

Scholarship rather than the *Cambridge Companion to Art History*, as Kraus herself points out.[117]

Regardless of the disciplinary background and directionality of debate, the topic loses contours unless viewed with an eye towards the tangible. In that regard and with respect to Weitzmann's evolutionary interests and their connection to the medieval picture programmes already mentioned in this chapter, there is one aspect in Kraus' article that we should take note of. It concerns Frederic Bartlett and the changes that the manual process of copying pictures introduces; changes that sometimes end up transforming the semantics of that which is depicted (for an illustration of which, see **FIG. 26** showing Frederic Bartlett's experimentation with the manual serial reproduction akin to a game of *stille Post* ('whisper down the lane') where a pictorial depiction of an owl, through its reproduction, eventually morphs into a cat).[118] Essentially, such a line of thought seeks to understand *why* transmission variance occurs. This can be useful in certain contexts. The scholarly edition of pictorial material is not chief among them, or at least not where the mere establishment of the variance is concerned. Despite the stemmatological nature of editions and the notion that they must establish the relationship between each witness, the most simple layer is yet another, namely the layer of *Befund* ('record') – as opposed to the layer of *Deutung* ('interpretation'), in the

117 Cf. Kraus 2013, 255. Kraus makes the case that picture criticism might learn something from textual criticism since "textual scholarship teaches patterns of thought that help us reckon with 'deep time,' time measured in intervals of tens, hundreds, or even thousands of years" (ibid.). If this is to mean that art history might benefit from paying attention to matters of transmission variance and an analysis of the historical situatedness of its objects of study as well as their transformation over time, then the point is well-taken, although one could surmise that this already lies at the core of the discipline; more difficult to determine, still, is why art history would need to be taught to do so by textual scholarship or why that would be the primary purpose of discussing transmission variance rather than a desire to allow for a different kind of study and comparative representation of material; different for art history, although not entirely so as has been indicated, and, much more importantly, different for textual scholarship. This as a side note, since the directionality of interdisciplinary influences in editorial theory does have implications for the conversations that must take place to facilitate such exchange and integration.

118 Cf. Kraus 2013, 245–248.

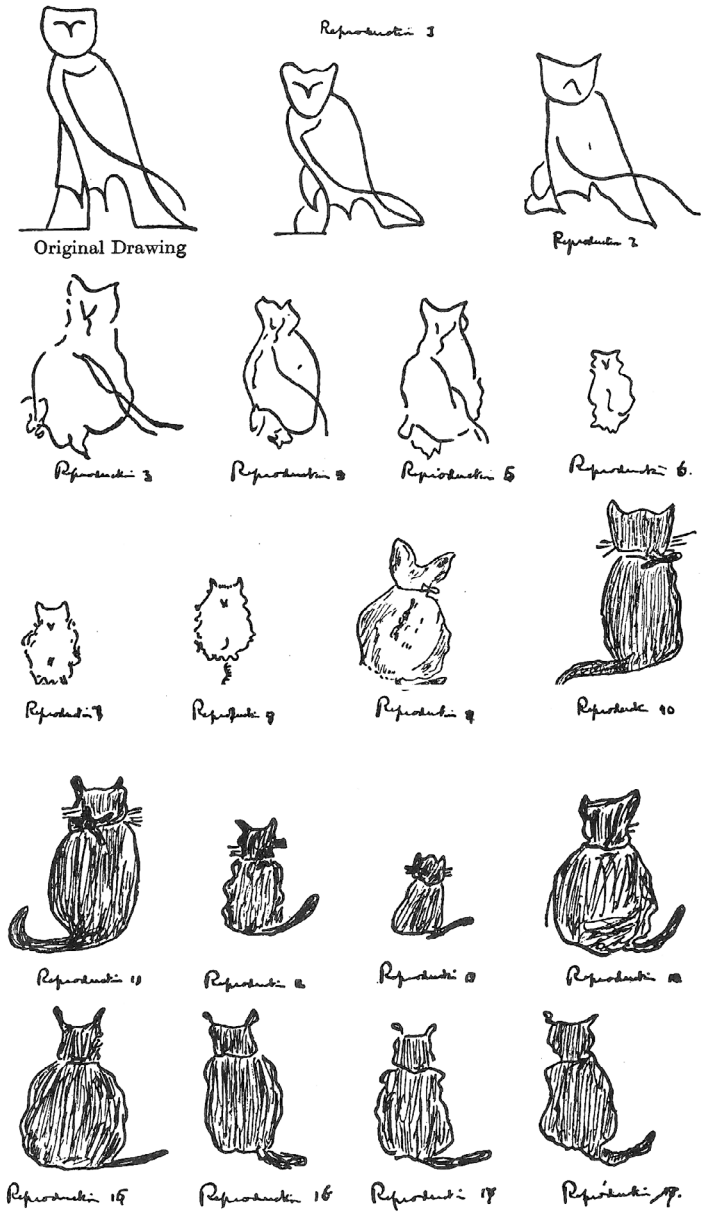


FIG. 26: A study in manual serial reproduction of images; from Frederic Barlett, *Remembering: A Study in Experimental and Social Psychology*, Cambridge: Cambridge University Press, 1967, 180f. [originally published in 1932].

distinction of Zeller.[119] In this view, the first step of a scholarly edition is to record the transmission variance. In order to do this, it is not necessary to *understand* the transmission variance, or it is only necessary insofar as it is necessary in order to record it in a traditional view, viz. by choosing a *Leithandschrift* and determining dependencies: what to present as a lemma and what as a variant. For an indiscriminate approach that first aims to record the variance and then to present dependencies dynamically, such reasoning is not a prerequisite.

A good example for this is Edgar Breitenbach's study of the *Speculum humanae salvationis* from 1930.[120] Breitenbach did examine the evolution of its illustrated manuscripts and he did perform an art-historical analysis that questioned how the manuscripts are affiliated; nevertheless, in the service of this he created a catalogue of the pictorial transmission variance that he explicitly constructed as an equivalent to the philological practice of textual criticism with its *apparatus criticus*.[121] To systematize this catalogue, he followed his predecessors in dividing the work into chapters and the chapters into series of *Bildtypen* ('picture types') which he then described on the basis of the supposedly prototypical Schlettstädter manuscript while noting the variants in other manuscripts.[122] These descriptions contain speculations over why some of the changes occur. One example for this is a variation in the depiction of the dream of Astyages.[123] Breitenbach notes that in a manuscript from the 15th century, Astyages is no longer lying in a bed but situated

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119 See, for the seminal article on *Befund* and *Deutung*, Hans Zeller, "Befund und Deutung: Interpretation und Dokumentation als Ziel und Methode der Edition," in: *Texte und Varianten: Probleme ihrer Edition und Interpretation*, ed. by Gunter Martens and Hans Zeller, München: C.H. Beck, 1971, 45–89. On the legacy of this distinction, see also Burghard Dedner, "Die Ordnung editorischer Darstellungen: Ein Vorschlag," in: *editio* 22 (2008), 60–89, online: <https://doi.org/10.1515/9783484605046.0.60>.

120 See Edgar Breitenbach, *Speculum humanae salvationis: Eine typengeschichtliche Untersuchung* (Studien zur deutschen Kunstgeschichte; vol. 272), Strasbourg: Heitz, 1930. This doctoral thesis by Breitenbach was supervised by Erwin Panofsky.

121 Cf. Breitenbach 1930, 2; for the catalogue, see 83–276.

122 For his thoughts on the *Urtypus*, cf. ibid., 62–66.

123 Cf. Breitenbach 1930, 96f. On the dream of Astyages, see also Christopher Pelling, "The Urine and the Vine: Astyages' Dreams at Herodotus 1.107–8," in: *The Classical Quarterly* 46/1 (1996), 68–77.



FIG. 27: The dream of Astyages in the *Speculum humanae salvationis*, 15th century; from Latin 512, Bibliothèque nationale de France, Paris, f. 4v, <https://gallica.bnf.fr/ark:/12148/btv1b60002575> (PD).



FIG. 28: The dream of Astyages in the *Speculum humanae salvationis*, 15th century; from Hs II 10, Stadtbibliothek Mainz, f. 3r, <https://nbn-resolving.org/urn:nbn:de:0128-3-2330> (CC BY-NC-SA 3.0).

on the floor.[124] He explains this by referring to an iconographically related manuscript from Wolfenbüttel in which the headboard of the bed resembles a construction similar to what then merged into a chapel entrance in the depiction where Astyages finds himself robbed of a bed by a potentially confused illustrator (see **FIGS. 27** and **28**).[125] This transformation recalls Bartlett's drawings. We see, therefore, that a discussion of these matters can be relevant for making sense of depictions to begin with. In some cases, identifying elements may be altogether

124 Cf. Breitenbach 1930, 96f., fn. 1.
125 Cf. ibid. The Wolfenbüttel manuscript that Breitenbach refers to was already believed to be lost when Lutz and Perdrizet published their edition of the *Speculum humanae salvationis* in two volumes in 1907 / 1909 (for information on the manuscript, cf. Jules Lutz and Paul Perdrizet (Eds.), *Speculum humanae salvationis* (vol. 1), Mülhausen: Meininger, 1907, XVII, no. 196); I have chosen to show another manuscript instead which, according to Breitenbach, represents a similar type, cf. Breitenbach 1930, 97, fn. 1.

impossible without a knowledge of contextual transformation. In most cases, however, it stands to reason that the origin of a certain appearance of a certain element will not be so much a requirement for describing and thereby recording said variance but rather a byproduct of the same – in terms of process, not in terms of scholarly insight.

Kari Kraus evokes Morris Eaves, one of the editors of the digital *William Blake Archive*, and his statement that "[p]ictures are special cases. Pictures are problems."[126] Perchance it would be more helpful – for the task of scholarly editing and otherwise – to focus on a different quote from Morris Eaves instead in which he acknowledges that pictures may be problems but not ones that need all that much solving; or, in his words:

> As entangled as the spiraling processes of identification and interpretation are, and for all the hermeneutic loops that entertain academic minds, we didn't seriously doubt our ability to make rough but useful distinctions.[127]

Although his writings adjacent to his work on the *William Blake Archive* and the mark-up of the illustrations contained within never go into much detail as far as this process of distinction is concerned, he is correct in implying that it is possible to overcomplicate these matters. While it may be argued that a variance in style and a variance in content are of equal importance, they are, in the case of visual works, inextricably linked, as Weitzmann pointed out. In order to record the variance in transmission, it should suffice – as a first step and a first attempt at systematized description – to consider the semantic layer paramount. We already find this realised in Breitenbach's catalogue but also in Martha H. Fleming's edition of the *Genus nequam* part of the *Vaticinia de summis pontificibus* series, cited before, where she solved the conundrum of

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126 Morris Eaves, "Graphicality: Multimedia Fables for 'Textual' Critics," in: *Reimagining Textuality: Textual Studies in the Late Age of Print*, ed. by Elizabeth Bergmann Loizeaux and Neil Fraistat, Madison: University of Wisconsin Press, 2002, 99–122, here 101. Cf. Kraus 2013, 236.

127 Morris Eaves, "Picture Problems: X-Editing Images 1992–2010," in: *Digital Humanities Quarterly* 3/3 (2009), paragraph 25, online: <http://www.digitalhumanities.org/dhq/vol/3/3/000052/000052.html> (accessed 7 August 2023).

editing the picture programme as well as the text by placing a manuscript image ('facsimile') opposite it and constructing a pseudo-*apparatus criticus* beneath.[128] Almost all the variants that she notes are of a semantic nature, with the visual information given largely pertaining to the spatial placement of an element.[129] Similarly, when it comes to the description of picture programmes in manuscript catalogues or other literature, they are described in terms of their content first and foremost, with some information reserved for the visual depiction and placement of figures and objects.[130] Where possible, this content is further categorized, as in the case of the *Welsche Gast* where the picture programme was divided and numbered by Friedrich Wilhelm von Kries in the 1980s.[131]

Since there is no commonly established notation and subsequently transcription system for pictorial materials, the semantic description collapses the appearance of a symbol and its meaning. When our attention turns to the question of systematically describing pictorial materials, we quickly find that this is contingent on the degree of symbolism. The less symbolism there is in the pictures, to wit, the more abstract they are, the more the description of their appearance must shift into the foreground; or so one would think. One might criticize the notion that practicality should dictate a given approach. It seems to me that this is in need of deeper reflection, particularly from the perspective of art history and

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128 See Fleming 1999, 148–187.

129 For her description of the pictures in the descriptions of the manuscripts, see Fleming 1999, 40–93.

130 For an example of such descriptions, see Wachtel 1955, XLVI–LIX, or the catalogue description of the *Vaticinia* picture programme in Codex 13648 held at the National Library in Vienna, cf. Hermann Julius Hermann, *Die italienischen Handschriften des Dugento und Trecento. Teil 2 – Oberitalienische Handschriften der zweiten Hälfte des 14. Jahrhunderts* (Beschreibendes Verzeichnis der illuminierten Handschriften in Österreich; vol. 5: Die illuminierten Handschriften und Inkunabeln der Nationalbibliothek in Wien), Leipzig: Hiersemann, 1929, 200–205. Aside from this, one might also think of *Konkordanztabellen* (tables of concordances) where the correspondence of a typological picture programme in different manuscripts is compiled in tabular form (a concordance of concordances, if you like); e.g. what Martin Roland has done for the *Concordantiae caritatis* by Ulrich von Lilienfeld, cf. <https://www.univie.ac.at/paecht-archiv-wien/cc_html/cc-startseite.html> (accessed 11 March 2023).

131 See Friedrich Wilhelm von Kries (Ed.), *Thomasin von Zerclaere: Der Welsche Gast* (Göppinger Arbeiten zur Germanistik; vol. 425,1–4), Göppingen: Kümmerle, 1984–1985.

its well of expertise. Whether formalist-stylistic approaches such as those by Heinrich Wölfflin and Alois Riegl can be of any interest in this context is not for me to say although I will say that their criteria for a formal analysis of style would not seem to satisfy the criteria for a formal expression in the sense that the digital humanities typically employ, leading, at the very least, to a misperception of terms.[132] What is it that we can describe and are descriptions really the point of access that an edition requires? We are faced with a simultaneity of complexity and simplicity – the complexity of the intermedial reference systems sketched in earlier sections and the simplicity of recognition that allows us to characterize iconographic 'contents' in categories. The ambiguities of multitudinous meaningful markers and dimensions versus the delineation evidenced in the practice of scholarship already, regardless of computional capacities

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132 When contrasted against formalism in a computational context, the formalism of a Wölfflin might be better described as a certain 'schematicness' or 'table-oriented' type of observation although one should be careful not to be too simplistic and reductionist in the characterization of his approach (or that of his contemporaries); on the topic of which see the essay collection Mitchell B. Frank and Daniel Adler (Eds.), *German Art History and Scientific Thought: Beyond Formalism*, London / New York: Routledge, 2016 [first published by Farnham: Ashgate, 2012]. On digital art history, see Georg Schelbert, "Digital Art History – Digitale Kunstgeschichte: Überlegungen zum aktuellen Stand," in: *Computing Art Reader: Einführung in die digitale Kunstgeschichte* (Computing in Art and Architecture; vol. 1), ed. by Piotr Kuroczyński, Peter Bell and Lisa Dieckmann, Heidelberg: arthistoricum.net, 2018, 40–57, online: <https://doi.org/10.11588/arthistoricum.413.c5768>; there, see the statement: "without photography, no *Stilgeschichte* à la Wölfflin" (ibid., 52, original: "[o]hne Fotografie keine Stilgeschichte à la Wölfflin"). See also Peter Bell and Björn Ommer, "Computer Vision und Kunstgeschichte – Dialog zweier Bildwissenschaften," in: *Computing Art Reader: Einführung in die digitale Kunstgeschichte* (Computing in Art and Architecture; vol. 1), ed. by Piotr Kuroczyński, Peter Bell and Lisa Dieckmann, Heidelberg: arthistoricum.net, 2018, 60–75, online: <https://doi.org/10.11588/arthistoricum.413.c5769>. The issue with transmission variance such as the one we are discussing is, of course, that we might not only be interested in finding different witnesses of the same work but, supposing we already know what the witnesses are, want to find out what their *differences* are; what elements were added, which deleted, which *changed* from one object to another; and if we do not know every work witness and want to search a larger image database for evidence of the same work, the boundaries of interpictoriality or rather lack thereof may inevitably collapse the research focus, unless there was a way to finetune the distinction of likeness and difference such that we could observe a frame of commonality as the ideational frame of the 'work' (as opposed to the broader intermedial and -cultural frame of reference) while observing manifestational variance within that, in direct relation to each other.

and the ways in which they might or might not aid in the discovery of similarity and dissimilarity (the latter of which is important in the context of editorial concern since a transmission variance is by nature the detection of deviation from a common frame, necessitating the identification of that which belongs together and that which does not correspond within that, weighed against a threshold of significance that is usually semantically determined; and all of this organized within structures of meaningfulness).

F.
PANOFSKY AND THE ART OF ANALYSIS

While the tradition of Panofsky's iconographical approach should not be confused with Weitzmann's picture criticism, it is important to draw on this antecedent in order to understand layered processes of description. If a structural paradigm undergirds modelling as a method in the digital humanities, then the closest relative that we can find in art history would be the step-by-step procedure that Erwin Panofsky proposed for the 'decoding' of historical images, especially from medieval and early modern times.[133] To structure something, we must divide it and name the components, after all. The *iconographic method* "remains the standard"[134] to this day and it is applied in digital projects, quite practically and specifically, by using the Iconclass classification system;[135] tagging the content of pictorial material with the goal of a semantic *Erschließung* ('making accessible'). Panofsky was preceded by the work of iconographers such as Adolphe-Napoléon Didron and Émile Mâle and later succeeded by the work of scholars such as Meyer Schapiro and Henri

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133 Cf. Erwin Panofsky, "Iconography and Iconology: An Introduction to the Study of Renaissance Art," in: *Meaning in the Visual Arts: Papers in and on Art History by Erwin Panofsky, New York: Doubleday Anchor Books, 1955,* 26–54 [originally published as "Introductory," in: *Studies in Iconology: Humanistic Themes in the Art of the Renaissance*, New York: Oxford University Press, 1939, 3–31].
134 Dieter Wuttke, "Erwin Panofsky (1892–1968)," in: *The Routledge Companion to Medieval Iconography*, ed. by Colum Hourihane, London / New York: Routledge, 2017, 105–122, here 105.
135 See <https://iconclass.org> (accessed 8 August 2023).

van de Waal, the latter of whom used it as the basis for Iconclass when it was first developed in the second half of the 20th century, published in printed form but with the capabilities of information technologies in mind early on, as far back as the 1940s.[136] Although Iconclass has come to dominate discussions of iconography in digital humanities contexts,[137] the iconographic method, as Panofsky describes it, was never predicated on the development of a vocabulary, either for the description of any and all (European) art[138] or the description of a specific domain of art. This is because the idea of such a vocabulary was always linked to a facilitation of retrieval (necessarily flattening layers of description into a single code of ascription), while Panofsky's approach was concerned with the differentiation of that which can and that which cannot be identified in and stated about artwork to begin with. For this, he divided scholarly assertions into three sequential stages: First, the *pre-iconographical description*, second, the *iconographical analysis*, and third, the *iconological interpretation*.[139]

One issue that he recognised was that humans cannot describe something in an entirely strict, formal way. Instead, "every description – before it even starts – will have to have reshaped the purely formal aspects of presentation into symbols of that which is presented; and therefore, it

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136 Cf. Hans Brandhorst and Etienne Posthumus, "Iconclass: A Key to Collaboration in the Digital Humanities," in: *The Routledge Companion to Medieval Iconography*, ed. by Colum Hourihane, London / New York: Routledge, 2017, 201–218, here 201. A very detailed account of the early history of Iconclass can be found in Claire Richter Sherman, "ICONCLASS: A Historical Perspective," in: *Visual Resources* 4/3 (1987), 237–246, online: <https://doi.org/10.1080/01973762.1987.9659131>.

137 See work such as Mingfang Wu [et al.], "Automated Metadata Annotation: What is and is not Possible with Machine Learning," in: *Data Intelligence* 5/1 (2023), 122–138, online: <https://doi.org/10.1162/dint_a_00162>, and Nikolay Banar, Walter Daelemans and Mike Kestemont, "Transfer Learning for the Visual Arts: The Multi-modal Retrieval of Iconclass Codes," in: *Journal on Computing and Cultural Heritage* 16/2 (2023), [1–16], online: <https://doi.org/10.1145/3575865>.

138 There are projects that address and mitigate the Eurocentrism of Iconclass by developing new indexing standards, such as the *Chinese Iconography Thesaurus* (CIT), led by Hongxing Zhang, 2019–, <https://chineseiconography.org> (accessed 8 August 2023). For more information, see <https://www.vam.ac.uk/research/projects/chinese-iconography-thesaurus-cit> (accessed 8 August 2023).

139 Cf. Panofsky 1939/1955, 33.

already reaches […] from a formal sphere into a sphere of meaning."[140] This also explains why he calls the pre-iconographical description a "pseudo-formal analysis."[141] It is based on the immediate experience of life and should thus – theoretically – consist of observations available to every human being; the most elementary recognition of that which is depicted. After that comes the recognition dependent on an awareness

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140 Erwin Panofsky, "Zum Problem der Beschreibung und Inhaltsdeutung von Werken der bildenden Kunst," in: *Ikonographie und Ikonologie: Theorien, Entwicklung, Probleme* (Bildende Kunst als Zeichensystem; vol. 1), ed. by Ekkehard Kaemmerling, Köln: DuMont, 1979, 185–206, here 187 [originally published in *Logos* 21 (1932), 103–119 and reprinted in *Aufsätze zu Grundfragen der Kunstwissenschaft*, ed. by Hariolf Oberer and Egon Verheyen, Berlin: Volker Spiess, 1964, 85–97], original: "Jede Deskription wird – gewissermaßen noch ehe sie überhaupt anfängt – die rein formalen Darstellungsfaktoren bereits zu Symbolen von etwas Dargestelltem umgedeutet haben müssen; und damit wächst sie bereits […] aus einer rein formalen Sphäre schon in eine Sinnregion hinauf." (A translation of the article is available as Erwin Panofsky, "On the Problem of Describing and Interpreting Works of the Visual Arts," transl. by Jaś Elsner and Katharina Lorenz, in: *Critical Inquiry* 38/3 (2012), 467–482.) On the word 'symbol', a sidenote: Erwin Panofsky paid careful attention to Ernst Cassirer's work, both using Warburg's library, the *Kulturwissenschaftliche Bibliothek Warburg* (KBW) in Hamburg at the same time in the early 1920s; Cassirer's main work was the publication of the three-volume *Philosophie der symbolischen Formen* (1923–1929) which directly inspired Panofsky's essay "Die Perspektive als ‚symbolische Form'" (1927); this is noteworthy for a number of reasons but in this context primarily because it underlines that 'symbol' and 'symbolic' are commonly used words that, similarly to 'models' or 'signs', could stand further differentiation. Berthold Hub, for example, recalls Cassirer's differentiation between 'symbol', 'symbolic pregnance' and 'symbolic form' and argues that Panofsky, in contrast to later art historians writing about his work, did make a distinction between 'symbol' and 'symbolic form', cf. Berthold Hub, "Perspektive, Symbol und symbolische Form: Zum Verhältnis Cassirer – Panofsky," in: *Estetika: The Central European Journal of Aesthetics* 47/2 (2010), 144–171, online: <http://doi.org/10.33134/eeja.69>. See also Emmanuel Alloa, "Could Perspective Ever be a Symbolic Form? Revisiting Panofsky with Cassirer," in: *Journal of Aesthetics and Phenomenology* 2/1 (2015), 51–71, online: <https://doi.org/10.1080/20539320.2015.11428459>, and, for an argument about Panofsky fundamentally misunderstanding Cassirer, Rémi Mermet, "Cassirer et Panofsky: Un malentendu philosophique," in: *Labyrinth* 22/1 (2020), 56–78, online: <https://doi.org/10.25180/lj.v22i1.217>. On Panofsky and Cassirer, see furthermore Keith Moxey, "Panofsky's Concept of 'Iconology' and the Problem of Interpretation in the History of Art," in: *New Literary History* 17/2 (1986), 265–274, here 268f., and, more generally, Emily J. Levine, *Dreamland of Humanists: Warburg, Cassirer, Panofsky, and the Hamburg School*, Chicago: University of Chicago Press, 2013. For Panofsky's essay, see Erwin Panofsky, "Die Perspektive als ‚symbolische Form'," in: *Vorträge der Bibliothek Warburg, 1924–25*, ed. by Fritz Saxl, Leipzig: Teubner, 1927, 258–330 [reprinted in *Aufsätze zu Grundfragen der Kunstwissenschaft*, ed. by Hariolf Oberer and Egon Verheyen, Berlin: Volker Spiess, 1964, 99–167].

141 Panofsky 1939/1955, 40.

of the cultural web, the iconographical analysis; and after that the most elusive and abstract act of recognition, the one that is concerned with the *Weltanschauungssinn*, the meaning of the artwork on a deeper philosophical and psychological level – the actual interpretation that Panofsky wanted to differentiate from the mere classification of images:

> [Iconography] does not, however, attempt to work out this interpretation for itself. It collects and classifies the evidence but does not consider itself obliged or entitled to investigate the genesis and significance of this evidence […]. In short, iconography considers only a part of all those elements which enter into the intrinsic content of a work of art and must be made explicit if the perception of this content is to become articulate and communicable.[142]

And, to quote Panofsky even more liberally:

> In conclusion: when we wish to express ourselves very strictly (which is of course not always necessary in our normal talk or writing, where the general context throws light on the meaning of our words), we have to distinguish between three strata of subject matter or meaning, the lowest of which is commonly confused with form, and the second of which is the special province of iconography as opposed to iconology. In whichever stratum we move, our identifications and interpretations will depend on our subjective equipment, and for this very reason will have to be supplemented and corrected by insight into historical processes the sum total of which may be called tradition.[143]

Regardless of whether practitioners who subscribe to his theory have always adhered closely to this work process or not, it is important to recall it because it helps to understand the rationale permeating the field of iconography. Iconography is not without its detractors,[144] but it

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142 Ibid., 31f.
143 Panofsky 1939/1955, 39.
144 Some criticism centres around the notion that iconography presupposes the existence of meaning where there might be none or where there is simply none to be found, in the sense of none intended; Svetlana Alpers in particular has made this argument over

remains the only widespread methodology that 'formalizes', to the extent that that is deemed possible, the description and study of 'symbolic' art or visual culture.

A model of transmission variance is not necessarily a model that should account for an *interpretation* of that which it represents, in the iconological sense. Even the description and analysis of that which is transmitted is only relevant for editorial purposes insofar as it allows a relation of elements; Kemp's *Beziehungssinn*, the relational meaning. Panofsky's method is about relations as well: It studies how images relate to the viewer, to the culture they are embedded in (especially literature) and finally, how they relate to the world at large. But his steps do not provide the means to understand how they relate to each other if they are variants of the same work; or in other words, how a work relates to itself, if it exists in more than one manifestation. And while the method does account for the relation that an image has to a text, it does not account for the immediate environment that an image might be embedded in, *entwined* with a text or – and this is where it gets complicated with respect to medieval picture programmes that were transmitted multiple

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the years, especially pertaining to the iconological layer of interpretation (and, if I understand correctly, prompted by the excessive study and 'decodification' of emblem books in the Netherlands), see Svetlana Alpers, *The Art of Describing: Dutch Art in the Seventeenth Century*, Chicago: University of Chicago Press, 1983, and Svetlana Alpers, "Einleitung," in: *Ikonographie: Neue Wege der Forschung*, ed. by Sabine Poeschel, Darmstadt: WBG, 2010, 13–30. Such criticism can be misguided in that it does not point out flaws in the method as such, only in the intentions of those using the method to achieve certain goals and to arrive at certain forms of description; in that sense, it might diagnose a discrepancy between the insight that scholars who apply the method might aspire to gain and the insight that they will actually gain in relation to their object of study as well as the insight that they will not gain by singularly focusing on one approach. If there is a perception that the very existence of the method compels researchers to use it, then that might speak to a lack of convincing alternatives. Indeed, T. J. Clark would seem to have expressed that the issue lies with a misapplication of the method rather than its design by Panofsky when he delivered his famous verdict that "[i]conography is the notorious example: in a generation it has declined from a polemic about tradition and its forms, an argument over the conditions in which an artist encountered an ideology, into desultory theme-chasing." (T. J. Clark, "The Conditions of Artistic Creation," in: *Times Literary Supplement* 24 (1974), 561–562 [reproduced in and here quoted from *Selva: A Journal of the History of Art* (2019), online: <https://selvajournal.org/article/tj-clark-conditions-of-artistic-creation/> (accessed 8 August 2023)].)

times – at a later stage *disentangled* from the text originally accompanying it and entwined with a new text or no text at all.

If we take the essence of the manifestation of a work in a work witness as well as the relation of the witnesses to each other to be a *structural* manifestation, we must find ways to reflect their structural composition and de-composition. In this view, the layers of description move from Panofsky's meaning-oriented approach to a different kind of observation, namely to a regard for units of organization. We could identify and distinguish different stages of organization in the manuscript transmission of the picture programmes that we have discussed, but in the context of our inquiry, it is important to remember the level of abstraction that we are working towards. As stated before, we might do well to effect the abstraction of layers of structures rather than the abstraction of the structures themselves. In the following, I wish to exemplify what I mean:

What could be layers of structures that we might want to capture in our treatment of work witnesses? We could think of them as markers of layers first, as space (surface, dimension), sequence (order), composition (arrangement), appearance (form, style), content (meaning). This list is not exhaustive and could be specified further – undoubtedly, each of these may be argued to overlap and interact in specific ways. So, too, might any structural representation. The intent here is to draw attention to different aspects of an interrelated whole. In the abstract, these markers could be applied to multiple layers of description (which is to say: layers of a model) and the example of medieval manuscripts and scrolls suggests that the division of observation might be established along physical features of a work witness first and foremost.

Take manuscripts: Stages of pictorial transmission variance could be distinguished (1) on the level of the *manuscript*, (2) on the level of the *page*, and (3) on the level of the *image*. It might not be entirely correct to speak of the 'manuscript' here; or rather, the levels could possibly be extended to look at the manuscript as a unit overall which would then have to take into account that many works were not necessarily transmitted singularly in a manuscript but in composite manuscripts that were either assembled at the time of creation or sometime thereafter bound

together.[145] Examining these transmission contexts and what works were transmitted alongside each other would be interesting in itself but goes beyond the *work* focus. Consequently, as far as the *work* is concerned, the level of the manuscript is the level of the *witness*, the manifestation of a work in a single instantiation. To analyse the structural organization of the picture programmes – and the types of variances that occur in transmission – has to be achieved by way of comparison and a work cannot be compared against itself except by comparing its different occurrences, whether they exhibit variance or not. These occurrences are tied to the material objects and so the logic of division corresponds to them; but only to a certain degree, as has been explained in the case of the manuscript level.

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145 Karin Kranich-Hofbauer has emphasized the librarian distinction between manuscripts that include different texts which were copied together to form a thematic collection or were bound together soon after their creation being *Sammelhandschriften* and composite manuscripts that consist of different, initially independent parts of different origin and ages, bound together at a later point, being *zusammengesetzte Handschriften*; cf. Karin Kranich-Hofbauer, "Zusammengesetzte Handschriften – Sammelhandschriften: Materialität – Kodikologie – Editorik," in: *Materialität in der Editionswissenschaft* (editio / Beihefte; vol. 32), ed. by Martin Schubert, Berlin / Boston: De Gruyter, 2010, 309–322, here 309–311, online: <https://doi.org/10.1515/9783110231311.309>. This distinction has drawn criticism due to its ambiguity, cf. Michael Friedrich and Cosima Schwarke, "Introduction – Manuscripts as Evolving Entities," in: *One-Volume Libraries: Composite and Multiple-Text Manuscripts*, ed. by Michael Friedrich and Cosima Schwarke, Berlin / Boston: De Gruyter, 2016, 1–26, here esp. 3, fn. 7, and 7, fn. 27. For further literature on composite manuscripts, see the influential article Erik Kwakkel, "Towards a Terminology for the Analysis of Composite Manuscripts," in: *Gazette du livre médiéval* 41 (2002), 12–19 (wherein Erik Kwakkel differentiates between 'production units' and 'usage units' as components of composite manuscripts); Johan Peter Gumbert, "Codicological Units: Towards a Terminology for the Stratigraphy of the Non-Homogeneous Codex," in: *Il codice miscellaneo: Tipologie e funzioni. Atti del convegno internazionale (Cassino, 14–17 maggio 2003)*, ed. by Edoardo Crisci and Oronzo Pecere, Cassino: Università degli Studi di Cassino, 17–42; Patrick Andrist, Paul Canart and Marilena Maniaci, *La syntaxe du codex: Essai de codicologie structurale*, Turnhout: Brepols, 2013; Jürgen Wolf, "Sammelhandschriften – mehr als die Summe der Einzelteile," in: *Überlieferungsgeschichte transdisziplinär: Neue Perspektiven auf ein germanistisches Forschungsparadigma* (Wissensliteratur im Mittelalter; vol. 52), ed. by Dorothea Klein, Horst Brunner and Freimut Löser, Wiesbaden: Reichert, 2016, 69–82; and the comprehensive bibliography provided by Friedrich and Schwarke 2016, 23–26. In general, on medieval manuscript culture, see Erik Kwakkel, *Books Before Print*, York: Arc Humanities Press, 2018.

Once such levels are distinguished, they can be described with respect to the markers tentatively outlined. The choice for this distinction is partially based on the evidence of existing descriptions of picture programmes. Breitenbach's catalogue, for instance, has already been mentioned: The division of the *Speculum humanae salvationis* into 42 chapters and those chapters into types did not originate with him,[146] but it has carried through the reception of the work. A witness of the work would therefore be studied in relation to this summation of content. Since the respective picture programme is the series of pictures contained in the witness, it is of interest which depictions are included and excluded, as well as the order of their inclusion. This is what I would then call the variance on the level of the *witness*, that is to say, on the level of sequence that could, most broadly, be arranged in the structure of a chain where one element follows another. That idea is visualized in **FIGS. 29** and **30**: On the one hand, we have witnesses with segments (e.g. chapters or other content divisions, such as per prophecy) that are identifiable by colour code and number, they themselves containing further elements – units of meaning, units of any kind of partition – which are identified through symbolic differentiation. As can be seen in **FIG. 29**, not every witness contains every identified element or contains elements in the same order, and the elements within the elements differ in volume and arrangement as well; this is portrayed in an exaggerated way for illustrative purposes. In **FIG. 30**, we then have an abstract idea of the work which is not supposed to be an ideal type of representation but a maximal type of collection: It contains all elements that are present in either witness. Note that it does not represent the different order of elements in the different witnesses at this point, which it likely *should* if it were an actual maximal type of *representation*. We will discuss this further in the last chapter of the book.

Another level of variance would be the level of the page and here, in particular, as mentioned before, the matter of the layout, the *mise en page*. Focusing on this would mean focusing on space, on composition (which is not to say that one might not also focus on the other markers

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146 Cf. Breitenbach 1930, 44–55 and 62–69.

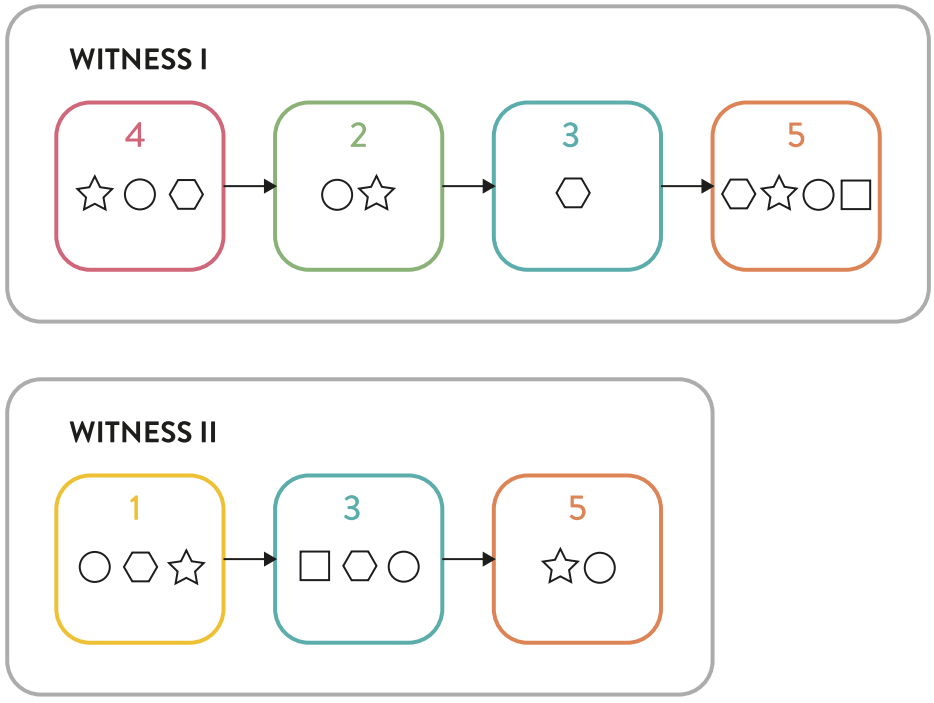


FIG. 29: An abstract visualization of the variation that might occur on the witness level, e.g. the omission and reordering of components.

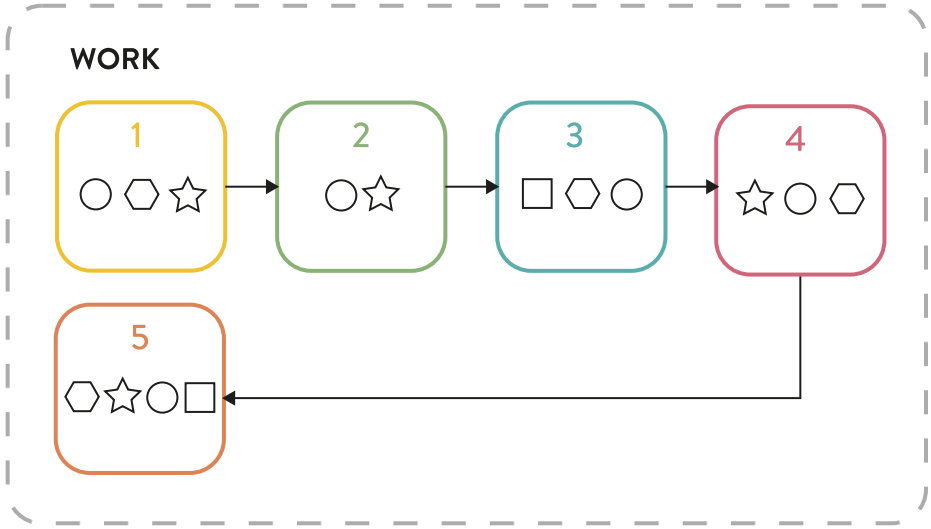


FIG. 30: An abstract visualization of the 'work' as a maximal type of tradition, containing all components from all witnesses.

for this level of observation). Since the interrelation between the picture programmes and any accompanying text has often been deemed of interest, this matter of content organization should be, too. Regardless of the meaning that one might ascribe to the layout of a page or the reason one might divine as the cause for that type of arrangement, it is clearly a delineated unit within which something is arranged (and the membrane would be the equivalent for the scroll). On the witness level, the ideational division of content dominates. On a page level, the material aspect comes to the fore, seeing as the assembly of a manuscript from sheets of parchment or paper necessarily results in page breaks as markers of division. The variant layouts in which the picture and text of the *Speculum humanae salvationis* are arranged (see **FIGS. 31** and **32**) should be recorded in a digital edition of this work, not only because they tie into the (re-)materialization and the spatialization that might be seen as characteristic for digital scholarly editions, but also because they would constitute a basis for an analysis of the evolution of this diagrammatic work component which might be relevant for study. It should be noted that the importance ascribed to 'the page' as a matter of interest – as well as the predominance of certain ideas about how medieval manuscript pages were designed and what the significance of that was – has been criticized in the past.[147] However, as with all questions in this book that pertain to medieval objects of study, the purpose of the present inquiry is not to make any sophisticated claims about the exemplary nature of that which is discussed; nor is there, in this particular case, any need to launch investigations into the underlying processes or intentions.[148] All we have

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147 Cf. John Dagenais, "Decolonizing the Medieval Page," in: *The Future of the Page*, ed. by Peter Stoicheff and Andrew Taylor, Toronto: University of Toronto Press, 2004, 37–70.

148 This is not to say that such investigations would not have to be part of scholarly editions, however, as they would surely have to be part of any serious study of source material. But the issue is one of a notion of a *Grundlagenedition* ('foundational edition'), on top of which other studies and investigations are crafted. That necessitates, of course, that such a foundational edition is open to amendment and expansion in terms of its *information model*. (The idea of a foundational edition is not to be confused with the notion of 'factual editions' or 'source editions with fact extraction' popularized by Georg Vogeler's 'assertive edition' concept, cf. Vogeler 2021 and Georg Vogeler, "The 'Assertive Edition': On the Consequences of Digital Methods in Scholarly Editing

to concern ourselves with at this stage and in this context are the means with which to describe observed variation in a structured manner.

Lastly, and perhaps most importantly – insofar as it impacts the picture programmes that are at the centre of our attention here –, variation occurs on the level of the image, or rather, picture. This variation is the variation that, if the pictures were texts, would traditionally be recorded in an *apparatus criticus*. Variants that are recorded in the critical apparatus are usually not the same kind of variation throughout; in texts, one might differentiate between orthographical variants, semantic variants, variants of omission or addition, variants of word order and sentence structure, and so on. This list is, again, not exhaustive or definitive since, interestingly enough, variants are generally not differentiated in the apparatus in those terms even though attempts at classification are far from arbitrary.[149] When we regard the transmission variance in picture programmes, we find that the same is true there; namely that there are different kinds of variation that could be classified if the merit of such an act were deemed sufficient enough to warrant the effort. It is, at this point, not quite apparent what could be gained by recording not only the variation itself but by qualifying it in such a way, unless that were to be a subject of study, in which case it would be obviously useful to facilitate a better understanding of the variation itself, i.e. by differentiating between topographical variants (e.g. of placement, orientation, alignment), semantic variants (e.g. one element being replaced by another or one element being changed to mean something else) and variants of omission or addition.

When compared to the kinds of variants that may similarly be described for texts, we might forego the equivalent of orthographical variants since we must assume that pictures collapse style and content.

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for Historians," in: *International Journal of Digital Humanities* 1 (2019), 309–322, online: <https://doi.org/10.1007/s42803-019-00025-5>).

149 In the context of digital editions, Elena Spadini has proposed a theory of modelling variants that accounts for a 'category of change' ("addition, deletion, substitution and transposition") and a 'linguistic aspect' ("orthography, morphology, syntax, lexis"), cf. Elena Spadini, "Exercises in Modelling: Textual Variants," in: *International Journal of Digital Humanities* 1 (2019), 289–307, here 292, online: <https://doi.org/10.1007/s42803-019-00023-7>.



FIG. 31: Some examples for page layouts of *Speculum humanae salvationis* manuscripts: text above a picture, two texts with two pictures interspersed, two pictures above each other, two texts underneath two pictures (text highlighted in yellow, the picture of the story of Balaam highlighted in blue and the picture of the story of the sealed fountain highlighted in red); from top left to bottom right Hs. 179, Universitätsbibliothek Freiburg, f. 3r, <http://dl.ub.uni-freiburg.de/diglit/speculum1436/0007> (PD); Cod. Pal. germ. 432, Universitätsbibliothek Heidelberg, f. 6v, <https://doi.org/10.11588/diglit.230#0020> (PD); 3378, Badische Landesbibliothek Karlsruhe, p. 5, <https://nbn-resolving.org/urn:nbn:de:bsz:31-1732> (CC BY 4.0); Hs II 10, Stadtbibliothek Mainz, f. 3v, <https://nbn-resolving.org/urn:nbn:de:0128-3-2330> (CC BY-NC-SA 3.0).

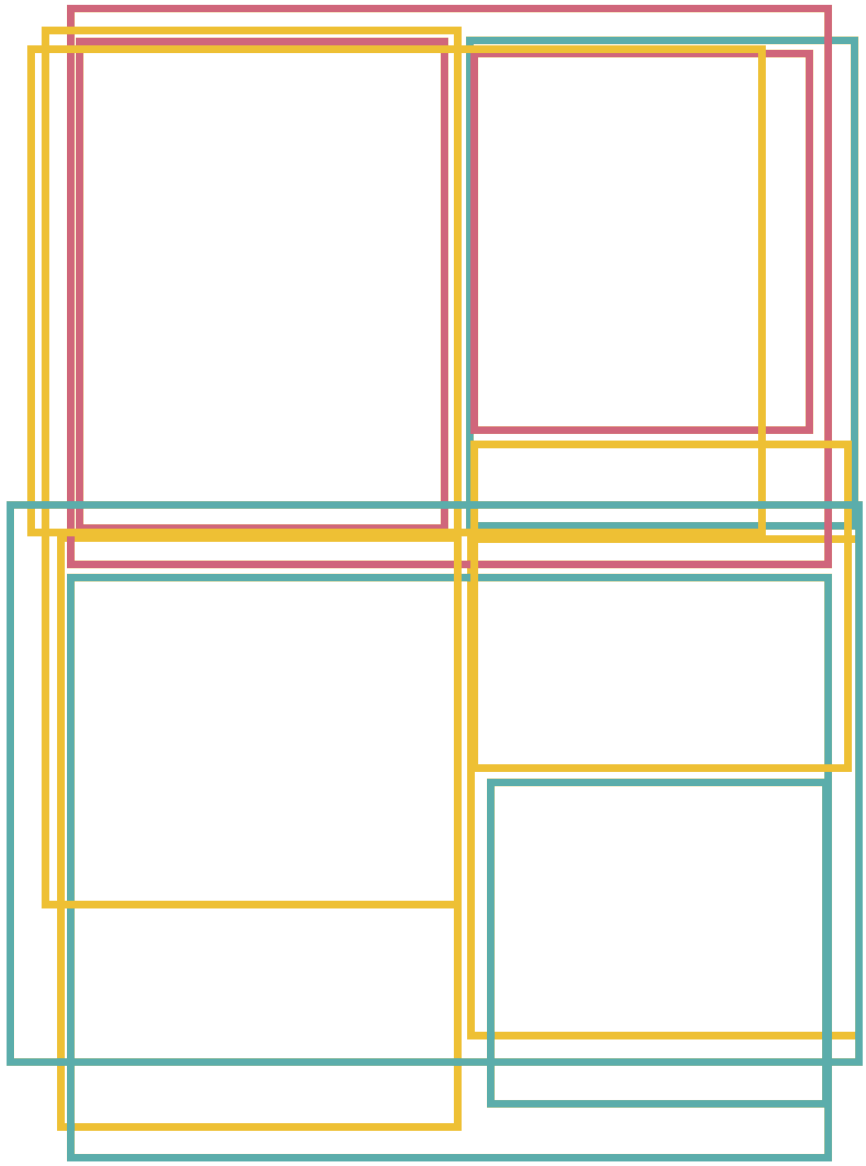


FIG. 32: Visualization of the layouts from **FIG. 31** overlayed with respect to the page dimensions, indicating the kind of structures that might emerge if this was done on a more comprehensive scale, considering that the work survives in several hundred manuscripts.

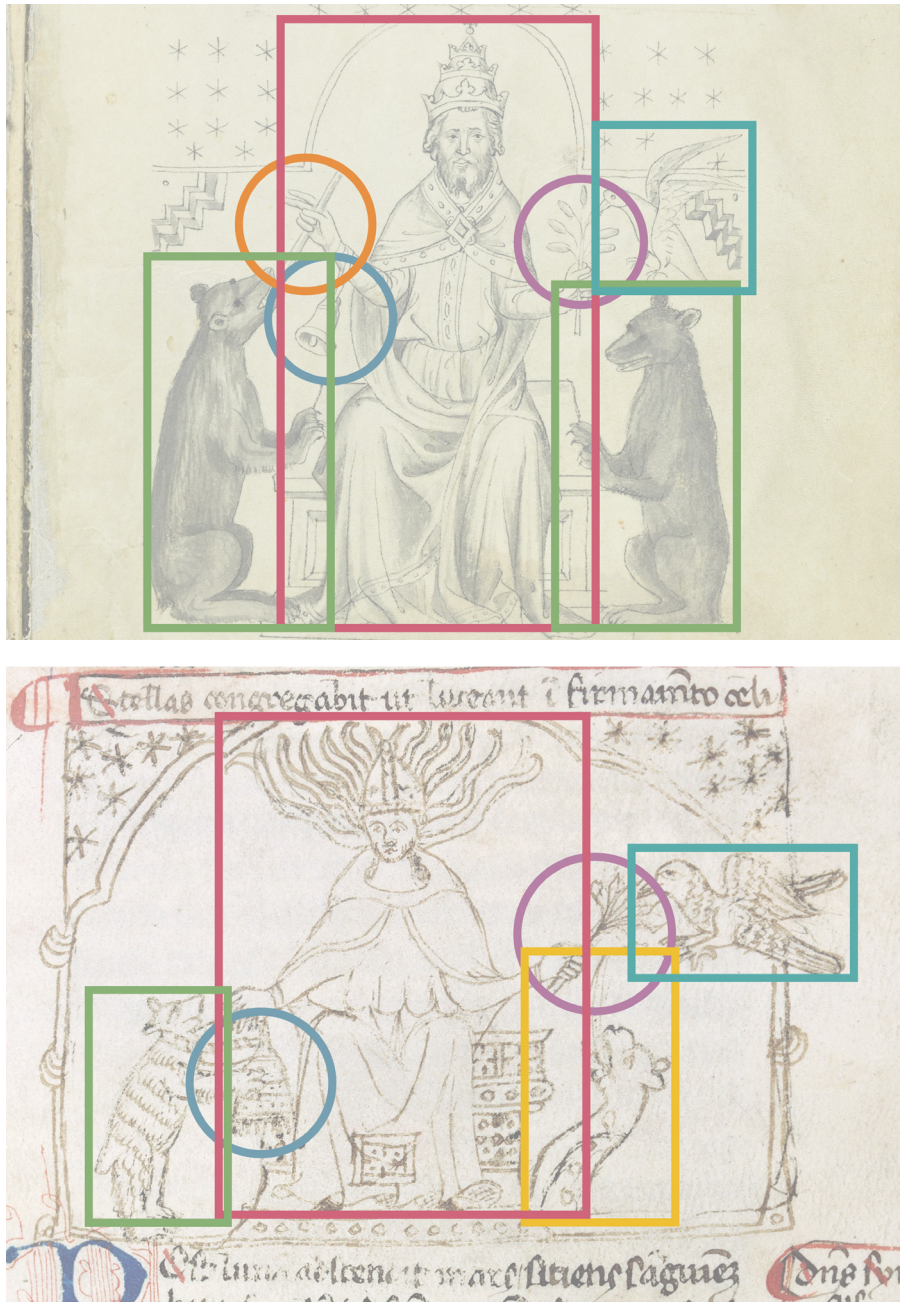


FIG. 33: Vaticinium I from the *Ascende calve* prophecies with highlighted (corresponding and diverging) elements; from VadSlg Ms. 342, Kantonsbibliothek, Vadianische Sammlung, St. Gallen, f. 1, <http://www.e-codices.ch/de/vad/0342/1> (CC BY-NC 4.0), and Ms. 68, Bibliothèque municipale, Châlons-en-Champagne, f. 61v, <https://portail.biblissima.fr/ark:/43093/ifdata75fb810cd375c252b0869f32d1f-3be0794c60446> (CC BY-NC 3.0).

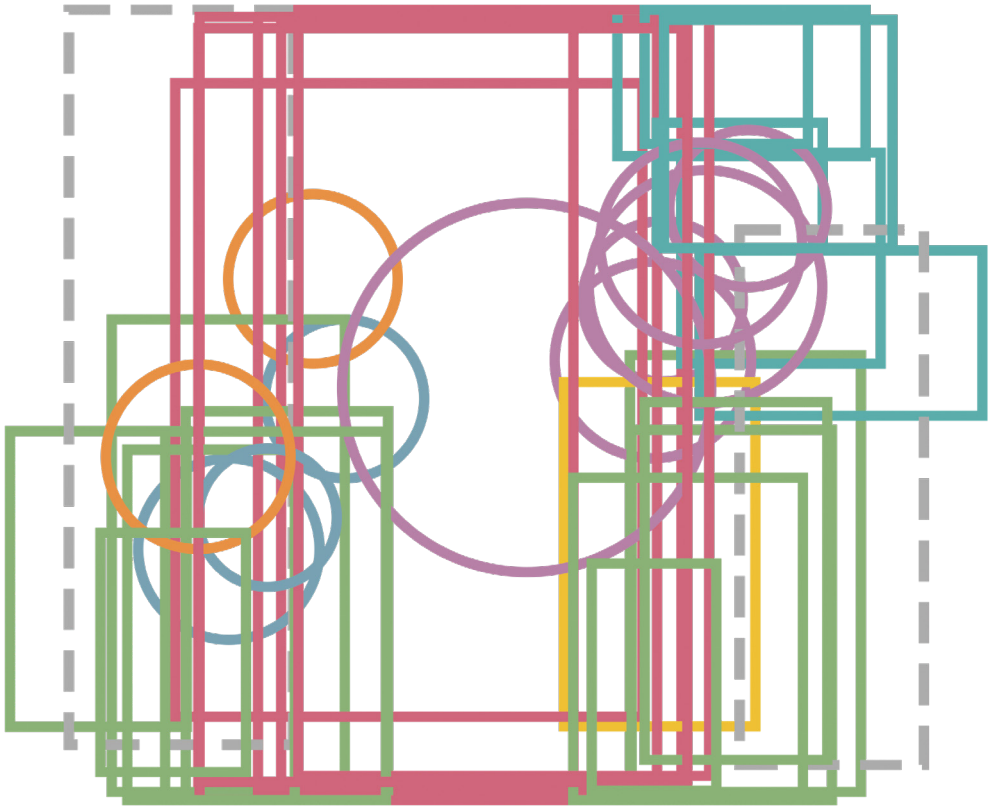


FIG. 34: Visualization of the mark-up from **FIG. 33** overlayed; in addition to the two manuscripts from the previous figure, this visualization includes mark-up of vaticinium I from Lat. 10834, Bibliothèque nationale de France, Paris, f. 1v, <https://gallica.bnf.fr/ark:/12148/btv1b84527986> [the grey dashed lines signify trees in the background of the depiction]; Cod. 13648, Österreichische Nationalbibliothek, Wien, f. 1v, <http://data.onb.ac.at/rec/AC13950379>; Arundel 117, British Library, London, f. 137r, <https://www.bl.uk/catalogues/illuminatedmanuscripts/record.asp?MSID=1706>; CC Cim. 6, Stiftsbibliothek, Kremsmünster.

With the topographical variants, we might note that they, too, are bound to that which is depicted – we are most likely to describe the displacement and rearrangement of elements in relation to their semantic identification. If we take the first *Ascende calve* prophecy, for example, and mark corresponding semantic elements with colour-coded bounding boxes, and if we then take those layers of mark-up and overlay them, we will see the obvious: that they are in spatial proximity to each other (see **FIGS. 33** and **34**). Although this is obvious, it is a crucial point to make, as it directly impacts the occurrence of transmission variance. It is not enough to identify what is depicted and to say that there is a man (or a pope or pope Nicholas III, depending on the level of specificity) and a dove and two bears and then to detail attributes or objects; to say that he is sitting and holding something in his hands or what he is holding in his hands. Any description would, at the very least, have to rise to the level found in old catalogue descriptions[150] and even then, the spatial relation would have to be emphasized. Not only is Nicholas III flanked by two bears, in some manuscript traditions, he is flanked by a bear to his right and a serpent to his left (see **FIG. 33**, Ms. 68).[151] That the dragon on the left is a variance of the bear on the left is a relation established by the fact that both occupy the same space in a topographical schema. The same could be said for elements that are missing or added in other cases – the omissions or additions speak for themselves, but they also speak to an expectation associated with a certain spatial composition. This might be the most important characteristic of pictorial transmission variance in comparison to textual transmission variance, although one might characterize word order and sentence sequence as inherently spatial or

150 See, for example, the description of this first prophecy from Codex 13648, National Library in Vienna, in Hermann 1929, 200: "Unter einem Kielbogen, auf einer mit einem Kissen bedeckten Bank thronend, Papst Nicolaus III. (1277–1280); er trägt über einem Untergewand einen weiten Mantel mit Kapuze, auf dem bärtigen Haupte eine Tiara mit ausgezacktem Stirnband. In der seitwärts erhobenen Linken hält er einen Büschel Ähren, an denen ein Vogel (eine Taube) pickt; in der gesenkten Rechten hält er einen Löffel, um Körner zu streuen; an seinem rechten Arm hängt eine Glocke. Zu beiden Seiten der Bank zwei aufwartende kleine Bären. Rechts und links vom Kielbogen je 10 Sterne, ebenso darüber 7 Sterne."

151 Right and left here used in the sense of dexter and sinister, from the perspective of the depicted.

OBJECT OF DESCRIPTION	MARKERS OF DESCRIPTION
I – *The witness* as such, meaning the entirety of a work transmission within a single witness	space (surface, dimension) sequence (order) composition (arrangement) appearance (form, style) content (meaning)
II – *The physical entity of divison* within the witness, e.g. page	space (surface, dimension) sequence (order) composition (arrangement) appearance (form, style) content (meaning)
III – *The unit of meaning* singled out, e.g. a picture	space (surface, dimension) sequence (order) composition (arrangement) appearance (form, style) content (meaning)

FIG. 35: Beginning of a schema for the recording of editorially relevant transmission variance beyond text.

directional as well. In lieu of abstracted symbols, however, the surface of placement and its coordination system gains significance as the point of reference.

These are very preliminary steps towards differentiating structures of pictorial transmission variance. In terms of Panofsky's schema, this might have to be ranked beneath or alongside the pre-iconographical description, some iconographic identifications notwithstanding. The basic nature might explain why such observations are not part of his schema: They concern aspects of visual organization that are so self-evident to the observer of a single manuscript and so insignificant to anyone interested primarily in the art itself (or, indeed, the text) that the need to describe them only arises from the wish to represent them (in relation to each other). Consequently, there are many more categories that one might employ for an analysis of the same material under a different premise. For a schematic summary of this approach, see **FIG. 35**. As we turn towards other types of transmission variance in other types of cultural heritage next, we will have to both broaden and specify the discussion further.



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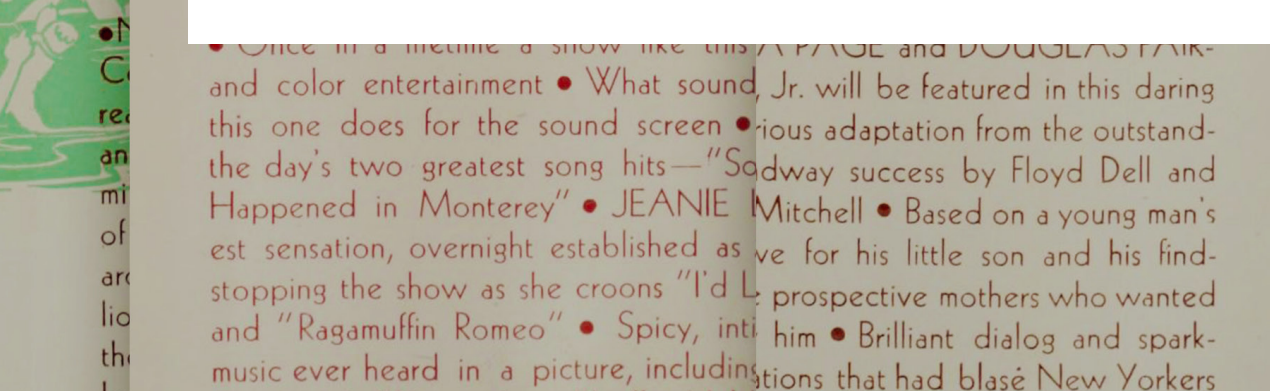






V films

Expanding the editorial horizon must be a matter of principle rather than being tied to one specific editorial subject. Consequently, this chapter broadens the scope of investigation by taking further materials of a multimedia nature into account. After a survey of relevant aspects pertaining to visual (art-)works through the ages, such as the question of the level of abstraction and how the multi-versioning of works might be perceived in that regard, the inquiry will focus on films as an editorial interest, from early silent films to later sound films, and discuss how issues that they highlight – such as the need for a distinction between primary and circumstantial evidence or the distinction between a restoration and a reconstruction of a work – interact with existing scholarship. In terms of developing a model for editorial approaches, the main consideration will lie with layers of interpretation.



Over time, motion pictures have swelled into a mighty tide; one that is, however, at risk of being lost, sinking into a stream of oblivion.

Anna Bohn, *Denkmal Film* (vol. 1: Der Film als Kulturerbe), Weimar [et al.]: Böhlau, 2013, 15, original: "Die bewegten Bilder sind im Lauf der Zeit zu einer mächtigen Flut angeschwollen; diese droht indessen verloren zu gehen, unterzugehen in einem Strom des Vergessens."

V

silent films, sound films

& other matters of interest

How to go from medieval picture programmes to modern motion pictures? First of all, by understanding that they relate to each other beyond being visual works that vary in their transmission. We can see this in the trajectory of (pictorial) art as such, across the centuries, and we can see it in the theories of an eminent art historian: Erwin Panofsky himself. As one of the first (and arguably last) representatives of his discipline to take a genuinely earnest interest in film, he leveraged his academic credibility in an attempt to integrate the study of the medium into the larger canon of art history in the 1930s.[1] To this end, he gave a series of presentations on the subject at prestigious institutions, starting at Princeton University in 1934 and culminating, memorably, in a lecture at the Metropolitan Museum of Art in 1936 where he had become, just a few months earlier, a member of the advisory committee of its newly-founded film department; something that he remained for two decades.[2] Indeed, when the *Society of Cinematologists* was founded in 1959,[3] Erwin Panofsky became its first honorary member.[4]

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1 Cf. Thomas Y. Levin, "Iconology at the Movies: Panofsky's Film Theory," in: *The Yale Journal of Criticism* 9/1 (1996), 27–55, here 28. On Panofsky's relationship with film as such, see Lutz Hieber, "Erwin Panofsky," in: *Handbuch Filmsoziologie*, ed. Alexander Geimer, Carsten Heinze and Rainer Winter, Wiesbaden: Springer VS, 2021, 49–67, online: <https://doi.org/10.1007/978-3-658-10729-1_10>.

2 Cf. Levin 1996, 27f.

3 It would go on to become the *Society for Cinema Studies* and later the *Society for Cinema and Media Studies* (SCMS); cf. Jack C. Ellis, "The Society for Cinema Studies: A Personal Recollection of the Early Days," in: *Cinema Journal* 43/1 (2003), 105–112.

4 Cf. Robert Gessner, "Erwin Panofsky (1892–1968)," in: *Film Comment* 4/4 (1968), 3. Gessner states that "the learned society of cinema was founded in 1960" but this

His early interest in the barely-yet emerged field of film studies was not just motivated by his own personal enjoyment of films or "cinephilic passion"[5] that started in 1905 "when there was only one small and dingy cinema in the whole of Berlin."[6] Most scholars have argued that his interest was also influenced by the way in which he could position the visual language of film as a continuation of a certain type of iconic art from a 'pre-modern' past, in contrast to the abstract tendencies of modernity that were closing in on his traditional *métier*, the study of fine arts.[7] His disregard for contemporary art was illustrated by a confrontation with the artist Barnett Newman in the early 1960s, prompted by Panofsky seeing Newman's abstract painting *Vir Heroicus Sublimis* in a magazine[8] and feeling compelled to correct its Latin title which had been misprinted as *Vir Heroicus Sublimus*.[9] Newman rightfully detected a hint of condescension and a string of combative letters to the editor ensued, debating grammar, style, and the banality of such remarks in the face of the question of art, ultimately leaving Newman with the last word on the matter:

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contradicts the account of Jack C. Ellis, the latter of whom I have chosen to follow due to his more detailed description of the events. According to Ellis, Panofsky was the featured speaker at the first meeting of the society in 1960, cf. Ellis 2003, 106.

5 Levin 1996, 29.

6 Ibid.

7 Cf. Regine Prange, "Stil und Medium: Panofsky 'On Movies'," in: *Erwin Panofsky: Beiträge des Symposions Hamburg 1992*, ed. by Bruno Reudenbach, Berlin: Akademie-Verlag, 1994, 171–190, here 172–175.

8 For the artwork in question, see Barnett Newman, *Vir Heroicus Sublimis*, 1950–1951, Museum of Modern Art, New York, 240.1969, online: <https://www.moma.org/collection/works/79250> (accessed 24 August 2023).

9 For more information about the dispute between Erwin Panofsky and Barnett Newman, see Beat Wyss, *Ein Druckfehler: Panofsky versus Newman – verpasste Chancen eines Dialogs*, Köln: König, 1993 [also published as Beat Wyss, "Ein Druckfehler," in: *Erwin Panofsky: Beiträge des Symposiums Hamburg 1992* (Schriften des Warburg-Archivs im Kunstgeschichtlichen Seminar der Universität Hamburg; vol. 3), ed. by Bruno Reudenbach, Berlin: Akademie-Verlag, 1994, 191–199]; Regine Prange, "Ein Zeitgenosse wider Willen: Panofskys Witz und die Ikonologie der Moderne," in: *Zeitenspiegelung: Zur Bedeutung von Traditionen in Kunst und Kunstwissenschaft. Festschrift für Konrad Hoffmann zum 60. Geburtstag am 8. Oktober 1998*, ed. by Peter K. Klein and Regine Prange, Berlin: Reimer, 1998, 331–345; and Pietro Conte, "The Panofsky-Newman Controversy: Iconography and Iconology Put to the Test of 'Abstract' Art," in: *Aisthesis: Pratiche, Linguaggi E Saperi Dell'Estetico* 8/2 (2015), 87–97, online: <https://doi.org/10.13128/Aisthesis-17567>.

> Dr. Panofsky's attack was unwarranted and unbecoming. Nothing that he writes now changes matters. Yet I hope that he is not convinced, for to be called *pictor sublimis* or *sublimus* by one who has consistently shown himself to be unfeeling toward any work of art since Dürer is too much. […] It is not Dr. Panofsky's praise that is needed. What is required is his apology.[10]

No apology came forth.

A.
THE ABSTRACTION OF MEANING

It seems to me that we should clarify the hermeneutics of art and film – to a certain extent and within a certain scope – before we can focus on transmission variances of the latter. This scope is guarded by a concern for 'the record' and that which can enter into 'the record', if we take a scholarly edition to be a record of a kind. Moving from medieval picture programmes to modern motion pictures carries within it an assumption that should be addressed: that we may find structures of description for that which is representational (and for that only). Let us, therefore, stay with this controversy for a moment.

Erwin Panofsky's likes and dislikes are not necessarily indicative of an irrevocable epistemological truth. Too much is made, perhaps, of his stance on contemporary art and its causal relationship with his methodological inclinations. Concerning the Panofsky-Newman debate, Pietro Conte suggests, for example, that it was, at its core, about "the complex and delicate matter […] whether or not iconology can be applied to 'abstract' (that is, non-figurative) art."[11] Earlier, Beat Wyss had already wondered how Panofsky could not have noticed that the original

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10 Barnett Newman, *Selected Writings and Interviews*, ed. by John Philip O'Neill and Mollie McNickle, Berkeley [et al.]: University of California Press, 1992, 220 [originally letter to the editor in *ARTnews* 60/5 (September 1961), 6].

11 Conte 2015, 92. On the topic of abstraction in Newman's work, see also Claude Cernuschi, "The Visualization of Temporality in the Abstract Paintings of Barnett Newman," in: *The Iconology of Abstraction: Non-figurative Images and the Modern World*, ed. by Krešimir Purgar, London / New York: Routledge, 2021, 114–125.

'offending' magazine article evoked iconology to ascribe meaning and, in doing so, honoured his method – extended it, even.[12] The old scholar, in this reading of the situation, had mistaken allies for adversaries.[13] And yet, if we search for such a position in his own words, we will sooner find them carefully weighed:

> Within their own sphere the same is true of the visual arts – at least in so far as they are representational (although I am profoundly convinced that, properly approached, so-called 'abstract' or 'non-objective' art is also open to an interpretation focused on meaning rather than 'form').[14]

It is not entirely clear what 'properly approached' should entail, but the challenge remains: How can we reckon with description and, thereby, interpretation, of that which eludes unambiguous observation?

Layers of abstraction have major implications for the edition of visual material. If one were to ask what the difference between medieval picture programmes in manuscripts and modern motion pictures is, the obvious answer would be, on principle, to consider the medium, i.e. that film is a time-based medium and usually adds an audio component to the layers targeted in the 'extraction' of information (and its relation to other components of a work). Conversely, if one were to ask what the commonality between those different examples of (audio-)visual works

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12 Cf. Wyss 1994, 197f. Wyss points out that the layout of the article by Robert Rosenblum (which contained the mislabelling of Newman's painting in the caption of a figure, not the body of the text) even evokes Aby Warburg's *Mnemosyne* image atlas in its contextualizing presentation of visual points of comparison, cf. ibid. On Warburg's *Bilderatlas*, see – in the context of digital humanities revisits since the topic is highly relevant to structural digital art history approaches – Stefka Hristova, "Images As Data: Cultural Analytics and Aby Warburg's Mnemosyne," in: *International Journal for Digital Art History* 2 (2016), online: <https://doi.org/10.11588/dah.2016.2.23489>, Naja le Fevre Grundtmann, "Digitising Aby Warburg's Mnemosyne Atlas," in: *Theory, Culture & Society* 37/5 (2020), 3–26, online: <https://doi.org/10.1177/0263276420906862>, and Amanda Du Preez, "Approaching Aby Warburg and Digital Art History: Thinking Through Images," in: *The Routledge Companion to Digital Humanities and Art History*, ed. by Kathryn Brown, London / New York: Routledge, 2020, 374–385.

13 Cf. Wyss 1994, 195.

14 Erwin Panofsky, "Meaning in the Visual Arts," in: *Magazine of Art* 44/2 (1951), 45–50, here 46.

in their respective media and in their share of editorial attention is, the answer would likely involve a consideration of figurative qualities. We could follow established opinion and link Panofsky's enthusiasm for film to this very notion. In a vein not at all dissimilar to the issues raised in the Panofsky-Newman debate (or rather the discussion of that debate by others), Regine Prange has theorized that Panofsky viewed films as the only legitimate heirs to traditional folk art because films – or 'motion pictures'[15] – tend to employ a certain kind of symbolism and thus remain susceptible to the iconographic method.[16] This is entangled in the idea of art as a mass medium, of communication to the masses and between the masses, of the dissemination of knowledge and cultural codes that can be decoded. Panofsky addresses this quite directly:

> Just so the silent movies developed a definite style of their own, adapted to the specific conditions of the medium. A hitherto unknown language was forced upon a public not yet capable of reading it [...]. For a Saxon peasant of around 800 it was not easy to understand the meaning of a picture showing a man as he pours water over the head of another man, and even later many people found it difficult to grasp the significance of two ladies standing behind the throne of an emperor. For the public of around 1910 it was no less difficult to understand the meaning of the speechless action in a moving picture, and the producers employed means of clarification similar to those we find in medieval art. One of these were printed titles or letters, striking equivalents of the medieval *tituli* and scrolls (at a still earlier date there even used to be explainers who would say, *viva voce*, 'Now he thinks his wife is dead but she isn't' or 'I don't wish to offend the ladies in the audience

15 Panofsky also referred to them as 'moving pictures' or simply 'pictures', cf. Erwin Panofsky, "Style and Medium in the Motion Pictures," in: *Film: An Anthology*, ed. by Daniel Talbot, Berkeley: University of California Press, 1966, 15–32, here 17 [originally a presentation in 1934, revised in 1936, 1937, and, most substantially, when it was published in *Critique* 1/3 (1947), 5–28].

16 Cf. Prange 1994, 180f. Wyss, in his lament of Panofsky's lack of engagement with contemporary art, mentions Panofsky's essay on film as proof that he was able to engage with contemporary *culture*, perhaps to suggest that his reaction to Newman was not for want of ability, but it is only a mention in passing and not more substantially integrated into the overall argument, cf. Wyss 1994, 196.

> but I doubt that any of them would have done that much for her child').[17]

Such was the argument in his seminal essay on film theory, drawing parallels between medieval art and modern film in terms of how either might have been comprehended by their respective audience. Interestingly, he emphasizes the text-image relation as a type of *in situ* decoding already woven into the fabric of these works. We can see this, as per his example, most obviously in silent films with their presence of intertitles,[18] where texts are used to relay dialogue and narrate aspects relevant to a character's actions and emotions (see **FIGS. 36** and **37** for a contrast in mood, setting, and meaning created and reflected by intertitles, here in the German expressionist film *Das Cabinet des Dr. Caligari* (1920), directed by Robert Wiene with a deep sense of unsettled, erratic tension, and F. W. Murnau's *Faust – eine deutsche Volkssage* (1926) with its amalgamated re-telling of the proto-German fantastical-medieval legend). The dependency of film on textual elements goes further than that, of course, as film scripts are a textual element, albeit one that may inform a film in its making rather than explicate it to viewers, generally speaking.[19] If we disregard the specific components of film works for the moment and consider the central editorial question across the ages – namely, whether editions of visual material are, by design, neo-iconographic, and whether we subconsciously tend to contemplate editorial efforts of materials

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17 Panofsky 1947/1966, 24f.

18 On the topic of which, see, in the context of critical editions, Anna Bohn, "Kritische Filmedition und Kommentierung: Versuch über einen Zwischentitel aus Sergej M. Eisensteins ‚Panzerkreuzer Potemkin' (1925)," in: *Strategien der Filmanalyse – reloaded. Festschrift für Klaus Kanzog*, ed. by Michael Schaudig, München: diskurs film, 2010, 252–276.

19 For the literary or textual dimension of films as rooted in film scripts and as discussed in an editorial context, see Kathrin Nühlen, "Filmskripte: Literarische Stoffe auf dem Weg zum Medium Film," in: *Aufführung und Edition* (editio / Beihefte; vol. 46), ed. by Thomas Betzwieser and Markus Schneider, Berlin / Boston: De Gruyter, 2019, 277–292, online: <https://doi.org/10.1515/9783110639261-022>, and Kathrin Nühlen, "Zur Problematik der Edition von Filmskripten," in: *Kritische Film- und Literaturedition: Perspektiven einer transdisziplinären Editionswissenschaft* (editio / Beihefte; vol. 51), ed. by Ursula von Keitz, Wolfgang Lukas and Rüdiger Nutt-Kofoth, Berlin / Boston: De Gruyter, 2022, 203–222, online: <https://doi.org/10.1515/9783110684605-011>.

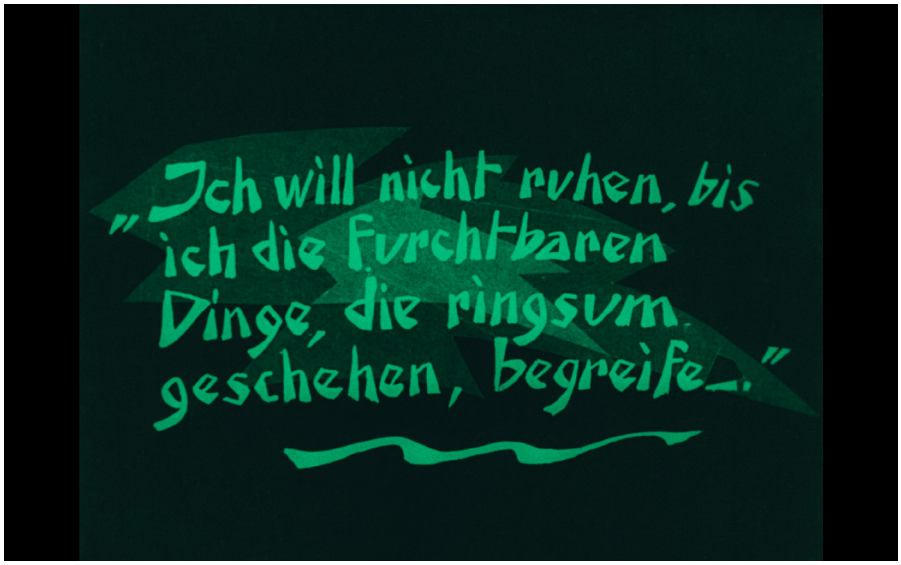


FIG. 36: Intertitle from *Das Cabinet des Dr. Caligari* (1920), dir. by Robert Wiene, expressing the terror of the character Francis upon learning of a murder; screen capture, Blu-ray: Eureka (Masters of Cinema; 92), 2014, time stamp 0:29:30 [restored by the Friedrich-Wilhelm-Murnau-Stiftung].



FIG. 37: Intertitle from *Faust – eine deutsche Volkssage* (1926), dir. by F. W. Murnau, narrating Faust's ordeal and prayer to find a cure for pestilence; screen capture, Blu-ray: Eureka (Masters of Cinema; 78), 2014, time stamp 0:08:24 (domestic version) [restored by the Friedrich-Wilhelm-Murnau-Stiftung].

that may be accessed thus[20] –, then we will find that Panofsky may have remarked on a certain kind of 'visual shorthand' in the films that he was acquainted with,[21] but we will also find that he did not subject them to a systematic analysis by means of his iconographic method and likewise never called on anyone else to do so; at least not in the written evidence of his involvement with film studies. His correspondence with noted film theorist Siegfried Kracauer does not contain any such mention either, and it is, in fact, Kracauer who, in reference to George Kubler's *The Shape of Time* (1962), observes:

> In turning against iconological study, Kubler is, as you said, not quite fair; for I do not see how a form class can be established without an inquiry into the meaning of the 'problem' from which the class

20 If we tie this question to an identification of symbolism, then we should note that symbolism in art is said to be subject to change over time, cf. Hildegard Kretschmer, *Lexikon der Symbole und Attribute in der Kunst*, Stuttgart: Reclam, ³2018, 8. See also publications such as Lena Liepe (Ed.), *The Locus of Meaning in Medieval Art: Iconography, Iconology, and Interpreting the Visual Imagery of the Middle Ages*, Kalamazoo: Medieval Institute Publications, Western Michigan University, 2018, or, indeed, if we move away from that kind of symbolism and towards semiotic approaches, such as those by Christian Metz when it comes to film description through the establishment of *syntagma* and the like, Christian Metz, "Le cinéma: Langue ou langage?" in: *Communications* 4 (1964), 52–90, and Jens Bonnemann, "Christian Metz (1931–1993) – die Semiotik des Films," in: id., *Filmtheorie: Eine Einführung*, Stuttgart: J.B. Metzler, 2019, 171–203, online: <https://doi.org/10.1007/978-3-476-04634-5_8>.

21 Cf. Panofsky 1947/1966, 25: "Another, less obtrusive method of explanation was the introduction of a fixed iconography which from the outset informed the spectator about the basic facts and characters, much as the two ladies behind the emperor, when carrying a sword and cross respectively, were uniquely determined as Fortitude and Faith. There arose, identifiable by standardized appearance, behavior and attributes, the well-remembered types of the Vamp and the Straight Girl (perhaps the most convincing modern equivalents of the medieval personifications of the Vices and Virtues), the Family Man, and the Villain, the latter marked by a black mustache and walking stick." The division of characters into types or rather stereotypes was more pronounced in the silent film era, as he himself points out, but echoes of it still reverberate in the language of film today, usually referred to in terms of *tropes*, e.g. the trope of glasses marking a female character as unattractive and the removal of glasses signifying a great transformation of beauty; indeed, one fails to see the fundamental difference between such a change in *Now, Voyager* (1942) and in *The Princess Diaries* (2001) where this transformation is, if anything, framed in an even more formulaic way. For a comparison of the two films in relation to the two novels they were based on, see Elizabeth A. Ford and Deborah C. Mitchell, *The Makeover in Movies: Before and After in Hollywood Films, 1941–2002*, Jefferson, North Carolina: McFarland, 2004, 20–29.

> or sequence issues. One might even say that such (iconological) inquiries are bound to result in the establishment of formal sequences.[22]

This is interesting for two reasons: Kubler had inadvertently triggered the Panofsky-Newman debate one year earlier, since it had been his review of Panofsky's *Renaissance and Renascences in Western Art* (1960) which had prompted Panofsky to read the magazine that contained Newman's *Vir Heroicus Sublimis* and the rest is as told – a coincidence, but an interesting one, nonetheless.[23] More importantly, Kubler's own proposal, still thought-provoking after all this time, sought to shift the view on art to more closely resemble distinctions in linguistics: "The structural forms can be sensed independently of meaning,"[24] he wrote, referring to the study of their evolution. With regard to iconology, he pointed out that "the breaks and ruptures of the tradition lie beyond the iconologist's scope, like all the expressions of civilizations without abundant literary documentation."[25] Perhaps it might be fair to say that in his thoughts on 'serial appreciation'[26] – which anticipate the efforts to understand the 'sequence' of multi-versioned works akin to "establishing the text"[27] in literary studies – and in his thoughts on 'iconological

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22 Siegfried Kracauer and Erwin Panofsky, *Siegfried Kracauer / Erwin Panofsky, Briefwechsel 1941–1966. Mit einem Anhang: Siegfried Kracauer 'Under the Spell of the Living Warburg Tradition'* (Schriften des Warburg-Archivs im Kunstgeschichtlichen Seminar der Universität Hamburg; vol. 4), ed. by Volker Breidecker, Berlin: Akademie-Verlag, 1996, 68, letter 62 [originally sent from Kracauer to Panofsky 31 March 1962]. Panofsky had recommended Kubler's book to Kracauer with the following postscript: "There has just appeared a book (perhaps not quite fair in all respects but highly intelligent and, above all, short) which you should certainly read because it deals, among others, with the problems of periodization, historicity, etc., from an entirely fresh point of view; the author is both a brilliant art historian and a well-trained anthropologist […]. I was sent an advance copy and was extremely fascinated." (Kracauer / Panofsky 1996, 67, letter 61 [originally sent from Panofsky to Kracauer 7 March 1962].)

23 Cf. Wyss 1994, 194f.

24 George Kubler, *The Shape of Time: The Shape of Time: Remarks on the History of Things*, New Haven / London: Yale University Press, ²2008, ix [originally published in 1962].

25 Kubler 1962/2008, 24. It should be noted that his theoretical innovation was, in no small part, related to his focus on Ibero-American and Pre-Columbian art.

26 Ibid., 40–42.

27 Kubler 1962/2008, 41.

diminutions'[28] – which acknowledge that "the word takes precedence over the image [in iconology]"[29] and that "the iconologist strips the fullness of things down to those schemes that the textual apparatus will allow"[30] –, he unknowingly sketched 'the problems' of an editorial programme for picture works that never came to pass.

One aspect that we may learn from this is that the abstraction of meaning is not dependent upon levels of representation, as Panofsky himself already suspected, but rather the assignment of meaning accorded by contextual information, textual or otherwise. This may be relatively self-evident. Whether or not the detection of meaning is a prerequisite for the division of a 'formal sequence' (defined by Kubler as "a historical network of gradually altered repetitions of the same trait"[31]) relies on the question of boundaries. If "the boundaries of [history's] divisions continually move,"[32] drawing boundaries does not only rest on an awareness of all that came before but also all that came *with* it.

Another aspect that we should keep in mind as we extend editorial purview is the question of the nature of variation (that is to say, dissimilarity within similarity). Medieval picture programmes, in particular those that dealt in mystique and diagrammatic enigmatism like the prophecies discussed in the previous chapter, gave way to the emblematic works popular in the 16th and 17th century,[33] filled with allegorical layers of text-image relations.[34] Digital presentations of such emblem books have taken a textual or semiotic approach in the past, aided by the symbolic status of the depictions.[35] Given that these were printed books

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28 Ibid., 116f.
29 Kubler 1962/2008, 116.
30 Ibid.
31 Kubler 1962/2008, 33.
32 Ibid., 31.
33 Cf. Kaup 2003, 175.
34 On the topic of emblem books, see Seraina Plotke, "Bildbuch und Emblematik," in: *Text – Bild – Ton: Spielarten der Intermedialität in Mittelalter und früher Neuzeit,* ed. by Joachim Hamm and Dorothea Klein, Würzburg: Königshausen & Neumann, 2021, 313–338.
35 Cf. Peter Boot, *Mesotext: Digitised Emblems, Modelled Annotations and Humanities Scholarship*, Amsterdam: Amsterdam University Press, 2009, 115–130. Boot classifies pictorial content with taxonomies and models their relation to texts in a graph-based ontology. This happens in a sign model where signs may be "vehicles (i.e. text and image

that draw attention by being impenetrable at first glance, their scholarly edition would likely focus on the annotation of the 'decoded' material rather than a variance in transmission. What of the opposite case? A variance in transmission where there is nothing to decode? The many versions of the portrait(s) of Francis Barber?[36] The studies of Vincent van Gogh that blur the line between draft, work, variant?[37] The variations

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fragments), and signs proper" (ibid., 121). His "sign model […] may be legitimately termed an interpretation" (ibid., 129) for the way in which it regularizes the expressions of metaphors and Boot acknowledges that the model does not so much validate the interpretation as expose it which, in turn and according to his view, "will increase our interpretations' robustness" (ibid., 130).

36 See Michael Bundock, "Searching for the Invisible Man: The Images of Francis Barber," in: *Editing Lives: Essays in Contemporary Textual and Biographical Studies in Honor of O M Brack, Jr.*, ed. by Jesse G. Swan, Lewisburg: Bucknell University Press, 2014, 107–122. For some of these versions, see Henry Edridge, c. 1785, Victoria and Albert Museum, London, 2941-1876, <https://collections.vam.ac.uk/item/O136626/portrait-of-francis-barber-watercolour-edridge-henry-ra/> (accessed 21 August 2023); in the manner of Sir Joshua Reynolds (1723–1792), Tate Britain, London, N05843, <https://www.tate.org.uk/art/artworks/reynolds-portrait-of-a-man-probably-francis-barber-n05843> (accessed 21 August 2023); and in the manner of Sir Joshua Reynolds (1723–1792), Tate Britain, London, T01892, <https://www.tate.org.uk/art/artworks/reynolds-portrait-of-a-man-probably-francis-barber-t01892> (accessed 21 August 2023).

37 See the example of his variations on the sorrowing old man which exists in the form of drawings, a lithograph, and a painting based on the earlier iterations. In 2021, a further study for the original pencil drawing was uncovered from a private collection, cf. [s.n.], "New Work by Van Gogh Discovered," press release, Van Gogh Museum (16 September 2021), online: <https://www.vangoghmuseum.nl/en/about/news-and-press/press-releases/new-work-by-van-gogh-discovered> (accessed 22 August 2023). For the other variants, see *Worn Out*, pencil on paper, 1882, Van Gogh Museum, Amsterdam, F0997 / JH0267, <https://www.vangoghmuseum.nl/en/collection/d0378V1962> (accessed 22 August 2023); *At Eternity's Gate*, lithograph on paper, 1882, Van Gogh Museum, Amsterdam, F1662 / JH0268, <https://www.vangoghmuseum.nl/en/collection/p0007V1962> (accessed 22 August 2023); and *Treurende oude man ('At Eternity's Gate')*, oil on canvas, 1890, Kröller-Müller Museum, Otterlo, F702 / JH1967, <https://krollermuller.nl/en/vincent-van-gogh-sorrowing-old-man-at-eternity-s-gate> (accessed 22 August 2023). Note that the museum comments, in the case of the oil painting, that it is "not a literal copy in colour" and that "[v]an Gogh modifies the composition" (ibid.). One could, therefore, seek to present the morphology of the work in a genetic edition. See also the references in his letters and the corresponding notes in the digital edition of his correspondence, such as Leo Jansen, Hans Luijten and Nienke Bakker (Eds.), *Vincent van Gogh: The Letters*, Amsterdam / The Hague: Van Gogh Museum & Huygens ING, 2009 [version: October 2021], letter 287 to Anthon van Rappard, The Hague, 24 November 1882, fn. 6, online: <https://vangoghletters.org/vg/letters/let287/letter.html> (accessed 22 August 2023).



FIG. 38: Details of Carl Spitzweg's variant *Der arme Poet*; from top to bottom: *Study for The Poor Poet*, oil on paper on cardboard, c. 1837, Grohmann Museum, Milwaukee, <https://artsandculture.google.com/asset/study-for-the-poor-poet-carl-spitzweg/GQGQjsKORrNd_g> (PD), *The Poor Poet*, oil on canvas, c. 1837, Grohmann Museum, Milwaukee, <https://artsandculture.google.com/asset/the-poor-poet-carl-spitzweg/PgG8I0sLj0WS1A> (PD), and *Der arme Poet*, oil on canvas, 1839, Bayerische Staatsgemäldesammlungen – Neue Pinakothek München, <https://www.sammlung.pinakothek.de/de/artwork/9pL3KbKLeb> (CC BY-SA 4.0).



FIG. 39: Demonstration of the 'yellow milkmaid syndrome' with details of Johannes Vermeer's *Het Melkmeisje*, c. 1660, SK-A-2344, Rijksmuseum, Amsterdam; on the left is the 'true' version provided by the Rijksmuseum, <http://hdl.handle.net/10934/RM0001.COLLECT.6417> (PD), on the right one of the many versions with low quality and low colour fidelity (here apparently sourced from a CD-ROM publication, <https://commons.wikimedia.org/wiki/File:Kuchenmagd_-_Jan_Vermeer_van_Delft.png> (Wikimedia Commons, PD)) that dominated online search results before the Rijksmuseum provided their own digitization for the public domain.

of a work created by Carl Spitzweg, be it *The Poor Poet* (see **FIG. 38**) or *The Bookworm*?[38] Would those be deemed to be of a graphical or visual variance but not of a semantic difference? (One suspects that this would be the case in the digital humanities with their focus on the identification and description of objects or otherwise delineated 'contents'.) And, one step further, what of the variance between digitizations of the same work that differ in quality and appearance, the so-called 'yellow milkmaid syndrome' once also aptly titled 'artwork with identity problems' (see **FIG. 39**)?[39]

Clearly, meaning (in the sense of an impression on an observer) extends beyond the layers we have hitherto concerned ourselves with. Form, style, colour, shape, perspective, material, format – in short, any conceivable analytical category cannot be exempt, and the 'record' of an edition must be malleable to genre, subject, medium, intent; obviously so. If we take the comparative project of the humanities to apply to structure as well as to meaning or any relation that ultimately relates back to us, contextualization becomes more than annotation, although it can be that as well. The presentation of variants in a non-explicated form is a type of contextualization onto itself. And we should note that the term *edition* might be restrictive, and that it stands to reason that digital curations of cultural heritage will further ease transitions between editions, archives, and exhibitions – focused on the collection of material, the comparison of material, the commentary of isolated material, all in different configurations of scholarship on the genesis, history (which is

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38 On *Der arme Poet* ('The Poor Poet'), WWV 125–127, see Siegfried Wichmann, *Carl Spitzweg: Verzeichnis der Werke; Gemälde und Aquarelle*, Stuttgart: Belser, 2002, 146f., and on *Der Bücherwurm* ('The Bookworm'), WWV 539–541, Wichmann 2002, 278f.

39 See Harry Verwayen, Martijn Arnoldus and Peter B. Kaufman, "The Problem of the Yellow Milkmaid: A Business Model Perspective on Open Metadata," *Europeana* white paper 2 (2011), [1–25], online: <https://pro.europeana.eu/post/the-problem-of-the-yellow-milkmaid> (accessed 22 August 2023). For examples of this phenomenon, see the blog curated by Sarah Stierch which contains the 'artwork with identity problems' phrase, <https://yellowmilkmaidsyndrome.tumblr.com/> (accessed 22 August 2023). See, furthermore, [s.n.], "The Yellow Milkmaid Syndrome: Paintings with Identity Problems," blog post, in: *Europeana* (7 January 2015), online: <https://pro.europeana.eu/post/the-yellow-milkmaid-syndrome-paintings-with-identity-problems> (accessed 22 August 2023).

often but not necessarily to say transmission), expression, inspiration, influence, or import of a work.

The synopsis is the point. The embedding *in* and *of*. With picture works, this might always have to involve a multimedia synopsis, not because a work has to be multimedia in nature (although it will, often, or even always, be) but because the intermediality of *any* work that we regard beyond text or other types of notation systems informs us as to the qualities that we may not be able to describe adequately otherwise. The effect of the intertitles in **FIGS. 36** and **37** would be lost on anyone reading a transcription and while a transcription may have other purposes, even within an edition, the primary purpose of an edition is to *bring near* that which it represents; the 'facsimile' will do so in terms of its immediate effect on the observer but only a visual synopsis beyond the work will do so in terms of style, typography, and other features of semantic significance (such as a view on German expressionism in the case of *Das Cabinet des Dr. Caligari* (1920) or the historicity of the Textura typeface in the case of *Faust – eine deutsche Volkssage* (1926)). Note that this concerns the inclusion of (visual) references in an edition of a work. We will return to the notion of an *edendum* beyond work later in this chapter.

Unlike picture works, film works have been discussed in light of their scholarly edition, or at least the need for and potential of it. Natascha Drubek-Meyer, Ursula von Keitz, Klaus Kanzog, and Anna Bohn are some of the scholars who must be named for their pioneering work at the intersection of film studies and editorial theory,[40] and I would also

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40 See, for a selection, Anna Bohn, "Ästhetische Erfahrung im (Um-)Bruch: Perspektiven kritischer Filmedition am Beispiel von Metropolis und Panzerkreuzer Potemkin," in: *Ästhetische Erfahrung und Edition* (editio / Beihefte; vol. 27), ed. by Rainer Falk and Gert Mattenklott, Tübingen: Max Niemeyer, 2007, 115–128, online: <https://doi.org/10.1515/9783110938845.115>; Natascha Drubek-Meyer and Nikolai Izvolov, "Textkritische Editionen von Filmen auf DVD: Ein Diskussionsbeitrag," in: *Montage AV* 16/1 (2007), 183–199; Klaus Kanzog, "Darstellung der Filmgenese in einer kritischen Filmedition," in: *editio* 24 (2010), 215–222, online: <https://doi.org/10.1515/9783110223163.0.215>; Ursula von Keitz, "Historisch-kritische Filmedition – ein interdisziplinäres Szenario," in: *editio* 27/1 (2014), 15–37, online: <https://doi.org/10.1515/editio-2013-003>. See also the seminal Anna Bohn, *Denkmal Film* (2 vols.), Weimar [et al.]: Böhlau, 2013 [hereafter referred to as Bohn 2013a and 2013b], and the entire volume Ursula von Keitz, Wolfgang Lukas and Rüdiger Nutt-Kofoth (Eds.),

like to mention Franziska Heller for her consideration of fractured film transmission and experience in the digital age.[41] As already indicated in **CHAPTER III**, one proposal of the field is the concept of *multimedia editions*, due to the nature of film; even so, the discourse is founded on a philological paradigm.[42] I neither aim to challenge this nor to relitigate the challenges and desiderata of editing film works as such, something I would be ill-equipped to do. The goal hereafter will be to identify issues both common and specific to (audio-)visual material of a more recent date than examples from medieval times in order to refine our understanding of editorial concerns – concerns that must come into focus once we move beyond textual scholarship. To that end, let us return to an essential: the matter of evidence.

B.
WHEREVER BOOKS ARE BURNED

It is estimated that 80–90 % of all films that were made before 1929 and

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Kritische Film- und Literaturedition: Perspektiven einer transdisziplinären Editionswissenschaft (editio / Beihefte; vol. 51), Berlin / Boston: De Gruyter, 2022, online: <https://doi.org/10.1515/9783110684605>.

41 See Franziska Heller, *Update! Film- und Mediengeschichte im Zeitalter der digitalen Reproduzierbarkeit*, Paderborn: Brill | Fink, 2020, online: <https://doi.org/10.30965/9783846764602>.

42 This philological background is widely acknowledged; cf. e.g. Jürgen Kneiper and Hans-Michael Bock, "Critical DVD-Editions," in: *Critical Editions of Film: Film Tradition, Film Transcription in the Digital Era*, ed. by Giulio Bursi and Simone Venturini, Pasian di Prato: Campanotto Editore, 2008, 67–71, here 69; Bohn 2013b, 341–350; and Keitz 2013, 36. It is also, perhaps best, exemplified by the existence of the descriptor *Filmphilologie* ('film philology'), see Klaus Kanzog, *Einführung in die Filmphilologie*, München: Diskurs-Film-Verlag Schaudig und Ledig, ²1997, and Anna Bohn, "Filmphilologie," in: *Handbuch Filmanalyse*, ed. by Malte Hagener and Volker Pantenburg, Wiesbaden: Springer VS, 2020, 195–216. The philological heritage is furthermore evident, for example, in the *Hyperkino* concept which is or was centred around a hypertextual concept of annotation rooted in philological traditions; it focused on a duality of *textus* and *apparatus* and presented a non-linear viewing experience by attaching texts, stills, photographs, etc. to time stamps of the 'main' film (the *textus*), cf. Natascha Drubek-Meyer and Nikolai Izvolov, "Critical Editions of Films in Digital Formats," in: *Studies in Russian and Soviet Cinema* 2/2 (2008), 205–216. This was done in the DVD format, and it is generally the case that the theory of film editions is not necessarily a theory of digital scholarly editions.

50 % of all films that were made before 1950 are lost.[43] Although there is reason to doubt the statistical veracity of such claims, based on a lack of comprehensive – not to mention global – studies,[44] film historians are well-familiar with the names of films that have been lost and the reasons behind this. Not only did the flammability of the nitrate film that was used at the time pose great problems when it came to the archival storage of material, as can be seen in the case of the fire that devastated a vault of 20th Century Fox in 1937 and destroyed an estimated 75 % of the films made by the production studio before 1930,[45] but the archival diligence was also lacking because films, especially silent films, were not perceived to be valuable cultural heritage and were thus prone to be discarded once the silent film era had ended.[46] (I might add that the general issue applies to music recordings as well, as was evidenced by the 2008 fire on the Universal lot that destroyed master tapes of many important musicians of the 20th century, something which went unnoticed by the public and the music industry at large until an investigative article in the *New York Times* revealed the extent of the destruction in 2019.)[47]

These incidents showcase a volatile archival history that plays an important role in the transmission variance that we have to contend with; if we still have something to contend with. As Anna Bohn has convincingly argued in her comprehensive study *Denkmal Film* (2013), film heritage is a historically neglected heritage, despite its cultural impact and documentary significance – all of which underlines the need for a practice of scholarly edition, i.e. preservation and presentation in all facets, to enable research about these materials and with the help of

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43 Cf. Bohn 2013a, 28. See, for more information, ibid., 17–29. See also Anthony Slide, *Nitrate Won't Wait: A History of Film Preservation in the United States*, Jefferson, North Carolina: McFarland, 1992, 5.

44 Cf. Caroline Frick, *Saving Cinema: The Politics of Preservation*, Oxford [et al.]: Oxford University Press, 2011, 65.

45 Cf. Aubrey Solomon, *The Fox Film Corporation, 1915–1935: A History and Filmography*, Jefferson, North Carolina: McFarland, 2011, 1.

46 Cf. Bohn 2013a, 24f. It should be noted that there are national differences in this regard; film archives in Russia, for example, are among the oldest in the world, cf. Drubek-Meyer / Izvolov 2007, 188, fn. 10.

47 Cf. Jody Rosen, "The Day the Music Burned," in: *New York Times* (11 June 2019), online: <https://www.nytimes.com/2019/06/11/magazine/universal-fire-master-recordings.html> (accessed 21 August 2023).

these materials.[48] The primary concern of scholarship is one of *evidence*: What do we have? What we know derives less from what we suspect than it does from what we *inspect* and when we edit a work, we edit a conception of the work that is based on that which we can glean from its material survival. In that sense, editions are never editions of a work, they are arguments for a collated interpretation of physically preserved witnesses of a work.[49]

Films that were shot analogously would, at first, seem to be straightforward cases where an authorially ordained cut is preserved in an original master negative. Establishing authority is, however, rather complicated.[50] Take, for example, the popular *auteur* theory – are film works truly the creation of a single 'author' (commonly synonymous with the director)? One does not have to reach back to the controversy surrounding *Citizen Kane* (1941), caused by Pauline Kael's famous essay "Raising Kane" (1971),[51] to question the validity of such a view, especially when applied to the majority of film history. Was it not Panofsky who stated: "It might be said that a film, called into being by a co-operative effort in which all contributions have the same degree of permanence, is the nearest modern equivalent of a medieval cathedral"?[52] In likening the role

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48 Cf. Bohn 2013a, 61–64, and *passim*.

49 This is a very simplified definition, of course, since editions typically involve different levels of inference and have historically relied on 'divination' as a path into a past "behind the materially extant instantiations, […] their lost, hence no longer material ancestry, [which] led by dint of method to such logical constructs as archetypes, if not indeed to original originals, or *urtexts*" (Gabler 2011, 8).

50 Cf. Bohn 2013b, 290–296.

51 The research behind some of Kael's claims was ethically dubious (and included plagiarism, cf. Frank Rich, "Roaring at the Screen With Pauline Kael," in: *New York Times* (27 October 2011), online: <https://www.nytimes.com/2011/10/30/books/review/roaring-at-the-screen-with-pauline-kael.html> (accessed 25 August 2023)). Many of the accusations made against Orson Welles were disputed as insubstantial. Nevertheless, they proved influential and revealed a core issue in the discussion of film works when centred around the idea of a sole genius. For the original essay, see Pauline Kael, "Raising Kane–I," in: *The New Yorker* (12 February 1971), online: <https://www.newyorker.com/magazine/1971/02/20/raising-kane-i> (accessed 25 August 2023), and Pauline Kael, "Raising Kane–II," in: *The New Yorker* (19 February 1971), online: <https://www.newyorker.com/magazine/1971/02/27/raising-kane-ii> (accessed 25 August 2023).

52 Panofsky 1947/1966, 29.

"of the director to that of the architect in chief"[53] and likening the roles of others accordingly, he already accounted for a distribution of labour that more accurately describes the nuance of collaboration. This would also appear to fit more closely with approaches in film studies that prioritize historical methodology over the adulation of filmmakers.[54]

Leaving the question of authoritativeness aside for the moment (which is always the question of whether there ought to be *one* version of a film according to its 'author'), volatile archival history points us towards a much more immediate reason for versioning – one that is not addressed by simply thinking that there was a negative that is now gone.[55] Let us consider *Anders als die Andern* ('Different from the Others', 1919). Here we have a film that (1) is deemed to be of historical importance, (2) was believed lost for the longest time, and (3) is nowadays available in a curated edition.[56]

Anders als die Andern was part of a series of controversial films directed by Richard Oswald during and after the First World War when

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53 Ibid.

54 This paradigm shift is sometimes described as *New Film History.* On this topic, see Thomas Elsaesser, "The New Film History as Media Archaeology," in: *Cinémas: revue d'études cinématographiques / Cinémas: Journal of Film Studies* 14/2–3 (2004), 75–117, online: <https://doi.org/10.7202/026005ar>; Andrew Spicer, "Film Studies and the Turn to History," review, in: *Journal of Contemporary History* 39/1 (2004), 147–155; and Richard Maltby, Daniël Biltereyst and Philippe Meers (Eds.), *Explorations in New Cinema History: Approaches and Case Studies*, Malden [et al.]: Wiley Blackwell, 2011.

55 See, for a discussion of the 'original' in film restoration and the many ways in which this is more complicated than commonly believed, Keitz 2013, esp. 17–20. See also Antonio Costa, "O for Original," in: *Il cinema ritrovato: Teoria e metodologia del restauro cinematografico*, ed. by Gian Luca Farinelli and Nicola Mazzanti, Bologna: Grafis, 1994, 35–40.

56 For information on the film, including the general information stated in the following paragraph, see Lauren Pilcher, "Querying Queerness in the Film Archive, the Ephemeral Anders als die Andern (Different from the Others) (1919)," in: *Synoptique* 4/1 (2015), 35–60, online: <https://www.synoptique.ca/_files/ugd/811df8_3e3a7d90f7d744b5811c246ea3772730.pdf> (accessed 25 August 2023); Kai Nowak, *Projektionen der Moral: Filmskandale in der Weimarer Republik*, Göttingen: Wallstein, 2015, 96–140; Siegbert Salomon Prawer, *Between Two Worlds: The Jewish Presence in German and Austrian Film, 1910–1933*, New York: Berghahn Books, 2007, 72–78; James Steakley, *Anders als die Andern: Ein Film und seine Geschichte*, Hamburg: Männerschwarm, 2007; and James Steakley, "Film und Zensur in der Weimarer Republik: Der Fall 'Anders als die Andern'," in: *Capri* 21 (1996), 2–33.



FIG. 40: Photograph of Nazis plundering Dr. Magnus Hirschfeld's institute, Berlin, 6 May 1933 (Manfred Baumgardt, Berlin); from the United States Holocaust Memorial Museum, courtesy of National Archives and Records Administration, College Park, <https://collections.ushmm.org/search/catalog/pa26351> (PD).



FIG. 41: Photograph of the book burning by the Nazis on the Opernplatz in Berlin, 10 May 1933; many items from Hirschfeld's institute were destroyed and a broken bust of Hirschfeld himself paraded at the event; from United States Holocaust Memorial Museum, courtesy of National Archives and Records Administration, College Park, <https://collections.ushmm.org/search/catalog/pa26367> (PD).

censorship restrictions were lowered for a short window of time at the dawn of the Weimar Republic.[57] With these films, the director sought to educate the public on taboo topics such as prostitution, abortion, sexually transmitted diseases, and, in the case of *Anders als die Andern*, the love between men. The goal of the film was not merely to educate but to advocate – namely, for the legalization of homosexuality. As one might imagine, this met with veritable resistance and the scandalized reaction increased as the years went by and the social climate in Germany changed. Contrary to the accidental reasons that I have cited for the loss of other films, the last remaining copies of *Anders als die Andern* were actively sought out and destroyed by the NS regime in 1933 when the *Institut für Sexualwissenschaft* was ransacked on 6 May 1933 (see **FIG. 40**) as part of the book burning that was held several days later, on 10 May 1933 (see **FIG. 41**).[58] The film had already been banned from public display in 1920 once censorship had been reinstated and Dr. Magnus Hirschfeld – who had been involved in the film's production as the main scientific advisor – had reused some of the footage in a documentary

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57 Cf. Andreas Killen, "What is an Enlightenment Film? Cinema and Sexual Hygiene in Interwar Germany," in: *Social Science History* 39/1 (2015), 107–127, esp. 108-112, and Jill Suzanne Smith, "Richard Oswald and the Social Hygiene Film: Promoting Public Health or Promiscuity?" in: *The Many Faces of Weimar Cinema: Rediscovering Germany's Filmic Legacy*, ed. by Christian Rogowski, Rochester, New York: Camden House, 2010, 13–30.

58 See Rainer Herrn, "Magnus Hirschfelds Institut für Sexualwissenschaft und die Bücherverbrennung," in: *Verfemt und Verboten: Vorgeschichte und Folgen der Bücherverbrennungen 1933* (Wissenschaftliche Begleitbände im Rahmen der Bibliothek verbrannter Bücher; vol. 2), ed. by Julius H. Schoeps and Werner Treß, Hildesheim [et al.]: Olms, 2010, 113–168, and Ralf Dose and Rainer Herrn, "Verloren 1933: Bibliothek und Archiv des Instituts für Sexualwissenschaft in Berlin," in: *Jüdischer Buchbesitz als Raubgut* (Zeitschrift für Bibliothekswesen und Bibliographie; special issue 88), ed. by Regine Dehnel, Frankfurt am Main: Klostermann, 2006, 37–51. See also the report about an exhibition about this very topic, Tamara Tischendorf, "Sexualwissenschaft und die Bücherverbrennung," in: *Deutschlandfunk* (7 May 2008), online: <https://www.deutschlandfunk.de/sexualwissenschaft-und-die-buecherverbrennung.691.de.html?dram:article_id=51607> (accessed 25 August 2023). Erich Kästner, whose books were among those being burned, attended the event and noted in his eyewitness report that the decapitated head of a bust of the director of the institute, Dr. Magnus Hirschfeld, was paraded around by the mob, cf. Erich Kästner, *Bei Durchsicht meiner Bücher: Eine Auswahl aus vier Versbänden*, Zürich: Atrium, 1946, preface. On the history of the institute, see also Rainer Herrn, *Der Liebe und dem Leid: Das Institut für Sexualwissenschaft 1919–1933*, Berlin: Suhrkamp, 2022.

called *Gesetze der Liebe* ('Laws of Love', 1927) in an effort to salvage parts of it. It was this footage, a fragment of around 40 minutes from an originally feature-length runtime, that was rediscovered in the Ukraine in the 1970s and used as the basis for a DVD release by the *Filmmuseum München* in 2006.[59] This release was part of the series *Edition Filmmuseum*[60] and contained a reconstruction of *Anders als die Andern* as well as the *Gesetze der Liebe* fragment by itself; in an updated release in 2007, historical documents concerning the reception and production of the film were added to the DVD and in a further update in 2022, a film from 1928 was added as another supplement.[61]

Since a portion of the film is lost, the reconstruction supplies information about the missing material *in situ* by displaying still images of the cut scenes as well as descriptions in the form of intertitles. These descriptions were taken from a booklet about the 1927 documentary and a publication by Dr. Hirschfeld from 1919 in which he details the plot of the film and provides excerpts from reviews and anonymized letters that he had received from filmgoers.[62] While the reconstructed film does disclose information about the reconstruction and what it was generally reconstructed from, it is not immediately clear upon watching what the

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59 Cf. Steakley 2007, 5.

60 See also Bohn 2013b, 349f. for mention of the series in addition to similar projects.

61 The film added to the 2022 edition, *Geschlecht in Fesseln*, dir. by Wilhelm Dieterle, is related to *Anders als die Andern* in that it utilized research from Hirschfeld's institute; it should be noted, however, that it is a vastly different film with a vastly different agenda and entirely different circumstances of creation; cf. for information on the edition *Anders als die Andern* (Edition Filmmuseum; 4), ed. by the Filmmuseum München and the Goethe-Institut München, supervised by Stefan Drößler, <https://www.edition-filmmuseum.com/product_info.php/info/p4_Anders-als-die-Andern---Gesetze-der-Liebe---Geschlecht-in-Fesseln.html> (accessed 25 August 2023) [originally published in September 2006, published in an extended edition in Juli 2007, third edition in Januar 2011, fourth extended edition in January 2022]. Among the other documents, parts of a correspondence between the directors Richard Oswald and Veit Harlan from 1958 are included. Richard Oswald took issue with Veit Harlan, once a famed director under the NS regime, who had released his latest film, the homophobic *Anders als du und ich* (1957), in an obvious allusion to *Anders als die andern* (1919).

62 See Magnus Hirschfeld and Hermann Beck, *Gesetze der Liebe: Aus der Mappe eines Sexualforschers*, Berlin: Neue Gesellschaft, 1927, as well as Magnus Hirschfeld (Ed.), *Jahrbuch für sexuelle Zwischenstufen* (vol. XIX/1,2), Leipzig: Max Spohr, 1919.

source for each specific interpolation is.[63] In assessing this, we should remember that there is no common standard for the scholarly edition of films just yet and that these releases target an interested audience outside of academia. It is a sign of the care and diligence by museums and archives that the release of this particular film should typify a certain kind of edition to begin with. One that we might call: *reconstructive edition*. This type of edition is not so much concerned with a variance in transmission as it is with fragmentary transmission. Textual criticism has arguably been aware of similar issues in textual transmission and dealt with them accordingly – by editing the surviving fragments and providing information about the missing parts, if such information is available through mentions, translations, or quotations elsewhere; indeed, one might even say that the entire field of Classics is founded on the distinction between direct and indirect transmission.[64] There are, however, some key differences. Most of them are related to the age of the materials: We simply know more about the circumstances of creation when it comes to works from the 20th century than we do when it comes to works from the 12th century. That is one important aspect. Another important aspect is a difference in the process of media production that goes beyond proximity or distance in time.

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63 Other sources that the editors Stefan Drößler, Klaus Volkmer, and Gerhard Ullmann drew from, as per the statements in the ending credits, are contemporary advertisements from film magazines, courtesy of the Filmmuseum Berlin; a German censorship record of *Gesetze der Liebe* from 12 August 1932, courtesy of the Bundesarchiv / Filmarchiv Berlin; Magnus Hirschfeld, *Sexualpathologie: Ein Lehrbuch für Ärzte und Studierende*, Bonn: A. Marcus & E. Webers, 1918 – presumably volume 2, although this is not specified; still images from the archives of the British Film Institute in London and the Filmmuseum Berlin; Steakley 1996. The detailed listing of the source material is to be commended, even if it does not satisfy the level of transparency and attribution that would be expected of a scholarly edition (something that the edition does not claim to be).

64 On the topic of *indirekte Überlieferung* ('indirect tradition') and its specific meaning in textual scholarship (pertaining to Classics), see Stephen Heyworth and Nigel Wilson, 'Indirect tradition,' in: *Brill's New Pauly*, Antiquity vols. ed. by Hubert Cancik and Helmuth Schneider, English Edition by Christine F. Salazar, Classical Tradition vols. ed. by Manfred Landfester, English Edition by Francis G. Gentry, online: <https://doi.org/10.1163/1574-9347_bnp_e524110> (accessed 26 August 2023) [first published online 2006].

Consider the case of missing scenes: Due to the mode of film production as well as the technology and crew involved, still photographers are usually employed to take film stills during production that can be used for promotional purposes; these are not frames of the finished film but separately created images.[65] Information about such scenes may also be obtained from detailed censorship records and other contemporary materials – if not even the original screenplay or different stages of screenplay[66] –, allowing for a different kind of reconstruction than the inventions one might entertain in textual criticism outside of the presence of direct or indirect textual witnesses.[67] As a side note: Censorship deserves special consideration, both as a reason for film versioning and a resource for film edition. The German context provides ample examples all on its own, but if we were to include Hollywood as one of the

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65 Sometimes the term 'film still' is used to refer to a frame of a film rather than a separately created image, cf. David Campany, *Photography and Cinema*, London: Reaktion Books, 2008, 136. However, as Douglas Gomery notes, "film stills are not to be confused with frame enlargements of shots actually used in a movie" (Douglas Gomery, "The Images in Our Minds: Film Stills and Cinema History," in: *The Princeton University Library Chronicle* 65/3 (2004), 502–520, here 502).

66 For an example of contemporary materials that may be collated, see the database *F. W. Murnaus ›Tabu‹ – Die Edition der Outtakes* by the Deutsche Kinemathek, Berlin, which includes outtakes, the shooting script, and daily reports from F. W. Murnau's last film *Tabu: A Story of the South Seas* (1931); cf. *F. W. Murnaus ›Tabu‹ – Die Edition der Outtakes*, ed. by Bernd Eichhorn, Karin Herbst-Meßlinger, Martin Koerber, Deutsche Kinemathek – Museum für Film und Fernsehen, Österreichisches Filmmuseum, Friedrich-Wilhelm-Murnau-Stiftung, <https://www.deutsche-kinemathek.de/de/sammlungen-archive/sammlung-digital/murnaus-tabu> (accessed 6 January 2023). For the database, see <https://tabu.deutsche-kinemathek.de/> (accessed 6 January 2023).

67 An example for the reconstruction of works by authors from antiquity are the works by Plautus, such as Plautus' *Amphitruo*, his *Rudens*, and his *Vidularia*; see Elaine Fantham, "Towards a Dramatic Reconstruction of the Fourth Act of Plautus' Amphitruo," in: *Philologus* 117/1-2 (1973), 197–214; Eckard Lefèvre, "Diphilos und Plautus: Der 'Rudens' und sein Original," in: *Abhandlungen der Geistes- und Sozialwissenschaftlichen Klasse / Akademie der Wissenschaften und Literatur* 10 (1984), 5–45; and Katalin Dér, "Vidularia: Outlines of a Reconstruction," in: *Classical Quarterly* 37/2 (1987), 432–443. In this context, it is also interesting to note the lack of digital scholarly editions of classical texts; cf. Paolo Monella, "Why Are There No Comprehensively Digital Scholarly Editions of Classical Texts?" in: *Digital Philology: New Thoughts on Old Questions*, ed. by Adele Cipolla, Padova: libreriauniversitaria.it, 2018, 141–159. In the same volume, see also Cappellotto 2018. As mentioned before, Thomas Bein has discussed the idea of reconstructing the performance of medieval literature in a multimedial editorial context, cf. Bein 2018.

most famous film industries, the Motion Picture Production Code and its effect on film history would fill entire volumes.[68] The introduction of the censorship guidelines in 1930 and enforcement in 1934 affected films for decades to come as well as retroactively. Some, like *Baby Face* (1933), were changed before their wide release,[69] others, like *Dr. Jekyll and Mr. Hyde* (1931) or *The Sign of the Cross* (1932), were substantially altered for their reissue once the Code had been firmly instated.[70] *Public Enemy* (1931), *Scarface* (1932) – the list could go on and on. That we should still have access to the uncensored versions of these films is often just a stroke of luck: Not only was *Dr. Jekyll and Mr. Hyde* (1931) edited for its re-release in 1935, all known copies were believed to have

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68 The Motion Picture Production Code was established in the late 1920s and early 1930s after a string of scandals had shaken Hollywood behind the scenes, like the Roscoe Arbuckle case and the William Desmond Taylor case. Catholic organizations in particular called for the moral self-censorship of the industry and Will H. Hays, a political operative and presidential campaign manager of William H. Harding under whose administration he also served, was tasked with establishing guidelines that would improve the public image of Hollywood by restoring both the private lives of Hollywood stars as well as on-screen depictions of moral issues such as alcohol consumption, violence, and so on, to respectable levels; since directors were hesitant to follow the guidelines as they felt it inhibited them in their artistic freedom, the Motion Picture Production Code became enforced in 1934 and every Hollywood film that wanted to get a wide release had to pass through the Production Code office and gain a stamp of approval. This practice remained in effect well into the late 1950s and was only officially abolished in 1968. Some of the administration files from the Production Code office, detailing the process of censorship for a selection of 500 films, have been made available digitally by the Margaret Herrick Library, see <http://digitalcollections.oscars.org/digital/collection/p15759coll30> (accessed 26 August 2023). For information on the history of the Motion Picture Production Code, see Thomas Doherty, *Hollywood's Censor: Joseph I. Breen and the Production Code Administration*, New York: Columbia University Press, 2009.
69 The uncensored version of the film was discovered in the Library of Congress in 2004, cf. Stephanie Zacharek, "1933: Baby Face is Censored," in: *A New Literary History of America*, ed. by Greil Marcus and Werner Sollors, Cambridge, Massachusetts / London: Harvard University Press, 2012, 668–672, here 669. For more detailed information on this discovery, see Kendahl Cruver, "Baby Face," in: *Senses of Cinema* 37 (2005), online: <https://www.sensesofcinema.com/2005/cteq/baby_face/> (accessed 26 August 2023). For more information on the censorship of *Baby Face*, see Lea Jacobs, *The Wages of Sin: Censorship and the Fallen Woman Film, 1928–1942*, Berkeley [et al.]: University of California Press, 1997, 69–79.
70 On the censorship of *The Sign of the Cross*, see David Blanke, *Cecil B. DeMille, Classical Hollywood, and Modern American Mass Culture: 1910–1960*, Cham: Springer, 2018, 106f. On the 1931 adaptation of *Dr. Jekyll and Mr. Hyde*, see David Luhrssen, *Mamoulian: Life on Stage and Screen*, Lexington: University Press of Kentucky, 2013, 55–59.

been destroyed by MGM around 1941 when they bought the rights to remake the film; fortunately, the studio did retain a print in its own vault which eventually led to its rediscovery (missing scenes had to be recovered from other sources, however).[71] And the original cut of *The Sign of the Cross* (1932) – which played a notable role in the calls for censorship – survived in a single print in the private collection of director Cecil B. DeMille and was restored in 1989 by the UCLA Film & Television Archive.[72] Until these primary witnesses could be unearthed, the original versions of the films were considered lost. All that was known about them was based on other types of evidence: newspaper reports, censorship files and correspondence, personal recollections in the form of oral history. Many films from the time share this fate and they are mainly not disruptive to the success that can be highlighted in those other cases because they are simply part of an anonymous statistic – only that which is in some way accessible is truly discussed, unless it represents a curio in the biography of one of the involved. Are those historical documents to be forgotten?

In editorial theory, many are wont to speak of such things as *Befund* ('finding') and *witness* in order to emphasize the investigative nature of scholarly editing; as if they were detectives working on cold (sometimes very cold) cases. Would it not be fitting, then, to consider this a matter of *circumstantial evidence*? Evidence that should be actively taken into account – for film and picture works alike? Let us recall the phenomenon of interpictoriality which does include pictorial quotations such as Bertram von Minden's adoption of Alexander Minorita's *Expositio in Apocalypsim*;[73] a type of secondary witness that could hypothetically supplement information about lacunae in an interrelated picture programme. We should not be deterred by the spectre of 'reconstruction' as it haunts the discourse in textual scholarship. Clearly, this is one area

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71 Cf. Luhrssen 2013, 59.

72 Cf. Richard Barrios, *Screened Out: Playing Gay in Hollywood from Edison to Stonewall*, London / New York: Routledge, 2005, 83.

73 See Bertram von Minden, *Altarpiece with 45 Scenes of the Apocalypse*, c. 1370s–1380s, Victoria and Albert Museum, London, 5940-1859, <https://collections.vam.ac.uk/item/O89176/altarpiece-with-45-scenes-of-altarpiece-master-bertram/> (accessed 11 March 2023).

where film and picture works merit special regard. I wish to illustrate this by returning, briefly, to the world of medieval manuscripts.

C.
RECONSTRUCTION / RESTORATION

The immediate example that comes to mind is the *Hortus deliciarum*.[74] It cuts to the heart of the issue of reconstruction since this picture programme was transmitted in only one manuscript which in turn was destroyed in the great fire of the Strasbourg library in 1870 during the Siege of Strasbourg in the Franco-Prussian War.[75] The destruction of the library claimed many valuable items and books, including a collection of around 8000 manuscripts and incunabula,[76] and the *Hortus deliciarum* is among its most well-known losses. It had already been studied in detail for decades beforehand; Christian Moritz Engelhardt had created a partial facsimile of its miniatures in 1818, and between 1879 and 1899, Alexandre Straub († 1891) and subsequently Gustave Keller published "as many tracings of the miniatures of the manuscript as they were able to assemble"[77] – Straub and Keller were, however, largely unaware of the transcripts and sketches that the French art historian Comte Auguste de Bastard had assembled in the 1830s and 1840s with the assistance of his friend Wilhelm Stengel; this material was first used, comprehensively, for a reconstruction of the manuscript in 1979.[78]

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74 For an introduction to the *Hortus*, see Michael Curschmann, "Texte – Bilder – Strukturen: Der Hortus deliciarum und die frühmittelhochdeutsche Geistlichendichtung," in: *Deutsche Vierteljahrschrift für Literaturwissenschaft und Geistesgeschichte* 55/3 (1981), 379–418.
75 Cf. ibid., 379. See also Gernot U. Gabel, "Die deutsche Tradition der Bibliothèque Nationale et Universitaire de Strasbourg," in: *Bibliotheksdienst* 38/3 (2004), 319–322.
76 Cf. Volker Wittenauer, *Die Bibliothekspolitik der Bibliothèque Nationale et Universitaire de Strasbourg, dargestellt am Projekt der Retrokonversion des Zettelkatalogs der deutschen Zeit (1870–1918)*, Heidelberg: Universitätsbibliothek Heidelberg, 2005, 7.
77 Joseph Burney Trapp, "Preface," in: *Hortus Deliciarum* (vol. 1: Commentary), ed. by Rosalie Green [et al.], Leiden [et al.]: Brill, 1979, VII.
78 Cf. Rosalie Green, "The Miniatures," in: *Hortus Deliciarum* (vol. 1: Commentary), ed. by Rosalie Green [et al.], Leiden [et al.]: Brill, 1979, 17–36, here 18 [hereafter Green 1979a]. For more details on the publication history, see ibid. For information on the materials used for the 1979 edition, see Michael Evans, "Description of the Manuscript

The 1979 edition contains miniatures in various stages of completion; some of them coloured, some only outlined, depending on the material they were reconstructed from.[79] The edition is, furthermore, explicit about being a 'reconstruction' – it was released in two volumes, titled *Commentary* and *Reconstruction* respectively. Given that the *Hortus deliciarum* is a rather particular case in that there was not only an original work but a single original manuscript that was demonstrably lost,[80] and given that the pictorial part of the work has dominated its reception,[81] the terminological emphasis on *recapturing* a rather specific object does not come as a surprise. In his preface to the edition, the then-director of the Warburg Institute Joseph Burney Trapp voiced his criticism of

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and the Reconstruction," in: *Hortus Deliciarum* (vol: 1 Commentary), ed. by Rosalie Green [et al.], Leiden [et al.]: Brill, 1979, 1–8. Despite claims to the contrary, it would seem that the Straub-Keller version was merely traced from Engelhardt's reproduction rather than being based on the original manuscript, at least in the case of the miniature 'Philosophy, the Liberal Arts, and the Poets', cf. Green 1979a, 19, and Rosalie Green, "Catalogue of Miniatures," in: *Hortus Deliciarum* (vol. 1: Commentary), ed. by Rosalie Green [et al.], Leiden [et al.]: Brill, 1979, 89–228, here 104.

79 See for the edition in general Rosalie Green [et al.] (Eds.), *Hortus Deliciarum* (2 vols.), Leiden [et al.]: Brill, 1979 [vol. 1: Commentary; vol. 2: Reconstruction; the latter hereafter Green 1979b]. For an example of a coloured miniature, see Green 1979b, 57 (f. 32r, plate 18). For an example of an outlined miniature, see ibid., 61 (f. 34r, plate 20).

80 Even though it is a particular case, it is far from the only such case. Another example would be the *Liber scivias* (c. 1151–1152) by Hildegard von Bingen. One illuminated manuscript (Hs. 1, Hessische / Nassauische Landesbibliothek, Wiesbaden) which is assumed to have been created c. 1160–1180 survived until the 20th century before it was lost in the confusion of the Second World War; however, the miniatures had been copied by hand in between 1927 and 1933 by the Benedictine sisters of Eibingen Abbey beforehand; cf. Michael Embach, *Die Schriften Hildegards von Bingen: Studien zu ihrer Überlieferung im Mittelalter und in der Frühen Neuzeit*, Berlin: Akademie-Verlag, 2003, 89f. See also Hildegard Schönfeld (Ed.), *Scivias: Die Miniaturen vom Rupertsberg*, Bingen: Pennrich, 1979, and Lieselotte E. Saurma, *Die Miniaturen im ‚Liber scivias' der Hildegard von Bingen: Die Wucht der Vision und die Ordnung der Bilder*, Wiesbaden: Reichert, 1998. For an edition, see Adelgundis Führkötter (Ed.), *Hildegardis Scivias* (Corpus Christianorum. Continuatio mediaevalis; vol. 43), Turnhout: Brepols, 2003 [originally published in 2 vols. in 1978].

81 See, for an early example, Otto Gillen, *Ikonographische Studien zum Hortus deliciarum der Herrad von Landsberg* (Kunstwissenschaftliche Studien; vol. 9), Berlin: Deutscher Kunstverlag, 1931, and, for a more recent study, Felix Heinzer, "Diagrammatische Aspekte im ‚Hortus Deliciarum' Herrads von Hohenburg," in: *Diagramm und Text: Diagrammatische Strukturen und die Dynamisierung von Wissen und Erfahrung*, ed. by Eckard Conrad Lutz, Vera Jerjen and Christine Putzo, Wiesbaden: Reichert, 2014, 157–174.

previous efforts in this regard by stating that "Straub and Keller's publication gave no true impression of the illustrations themselves or their order, and almost none of the substantial text which accompanied them, and its placing *vis-à-vis* the miniatures."[82] Again, we see that the *mise en page* of a picture programme and its relation to an accompanying text is deemed to be of importance and, had it been copied several times and survived in more than one manuscript,[83] it is likely or at least possible that there would have been variation of its layout as well as in the realization of the miniatures. Instead of speculating on a transmission variance that never came to be – or that we have no knowledge of –, it should suffice to note that this is a prime example for the need of explicitly *reconstructive editions*; meaning editions that recognize reconstruction as a guiding principle and functional purpose rather than something that occurs in any and all editions in some way or other by virtue of intervention and emendation. More than that, one might wonder what a *digital* reconstructive edition of the *Hortus deliciarum* could accomplish and, aside from the advantages purported to be inherent to digital scholarly editions, it would appear that a digital scholarly edition of the *Hortus deliciarum* would have to be an *edition of editions;* meaning that it would have to reflect prior reconstructive undertakings out of necessity and courtesy. Such an edition could collate the different ways in which scholars have made use of sketches, tracings, and transcripts that are all neither direct witnesses nor direct evidence but, depending on the respective definition, varying degrees of circumstantial evidence.

Adding the aspect of an *edition of editions* to the discourse is very reminiscent of a desideratum that Kay Hoffmann identified in his review of the 2006 study edition of the silent film *Metropolis* (1927):

> Furthermore, this solution suggests that an original Ur-version of 'Metropolis' might be established after all. If one takes the complex history of this classic

82 Trapp 1979, VII.
83 The Kupferstichkabinett in Berlin used to hold 27 copies of the *Hortus deliciarum* that were presumably lost during the Second World War as well; these had not been, I gather, contemporary manuscripts but rather "highly finished painted replicas" made on commission at a much later date, cf. Green 1979a, 19.

> into account, with all its variant versions, such an approach must raise serious doubts. Unfortunately, [the editors] have elected not to include a presentation of the different restorations and editions despite being presented with a unique opportunity to do so.[84]

We will refocus on the matter of film editions, among which the 2006 version of *Metropolis* ranks as one of the most serious attempts at a critical edition, in due course, but first I would like to seize on Hoffmann's mention of *restoration* since it is closely related to the topic of reconstruction.[85]

The field of restoration is broad and varied, both when it comes to films and to fine arts,[86] and the predominant approaches have undergone changes throughout the years.[87] It serves little purpose to repeat such debates in a general manner here; nonetheless, it would be remiss not to point out that aspects of them are relevant to the issues at hand, given that they have already entered editorial discourse. Notably, as indicated in **CHAPTER I**, Paul Eggert has drawn parallels between the scholarly

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84 Kay Hoffmann, "Mut zur Lücke: Zur Studienfassung des Klassikers ‚Metropolis'," in: *Zeithistorische Forschungen* 4/3 (2007), 449–455, here 454, online: <https://doi.org/10.14765/zzf.dok-1888>, original: "Außerdem suggeriert diese Lösung, dass es doch so etwas wie eine nachweisbare Urfassung von ‚Metropolis' geben könnte. Berücksichtigt man die komplexe Rezeptionsgeschichte mit den unterschiedlichsten Fassungen, dann erscheint ein solches Vorgehen gerade bei diesem Klassiker äußerst zweifelhaft. Auf eine Darstellung der unterschiedlichen Restaurierungsfassungen und Bearbeitungen, die sich in diesem Fall angeboten hätte, wurde leider verzichtet."

85 This is also true, although we will not expand on it, for the field of architecture. See, for example, Hanno-Walter Kruft, "Rekonstruktion als Restauration? Zum Wiederaufbau zerstörter Architektur," in: *Kunstchronik* 46 (1993), 582–589. In the context of architecture and for matters of digital reconstruction, see also the writings by Piotr Kuroczyński, such as the aforementioned Kuroczyński 2018.

86 See, for films, Paul Read and Mark-Paul Meyer (Eds.), *Restoration of Motion Picture Film*, Oxford [et al.]: Butterworth-Heinemann, 2000, and for art history Nicholas Stanley Price, Mansfield Kirby Talley and Alessandra Melucco Vaccaro (Eds.), *Historical and Philosophical Issues in the Conservation of Cultural Heritage*, Los Angeles: The Getty Conservation Institute, 1996.

87 See, by way of example, James Beck, "Reversibility, Fact or Fiction? The Dangers of Art Restoration," in: *Source: Notes in the History of Art* 18/3 (1999), 1–8, and Andreas Busche, "Just Another Form of Ideology? Ethical and Methodological Principles in Film Restoration," in: *The Moving Image: The Journal of the Association of Moving Image Archivists* 6/2 (2006), 1–29.

edition of literature and the restoration of art-historical objects.[88] His effort to integrate different practices into a common conceptual framework was subsequently criticized by Hans Walter Gabler, who identified flaws in Eggert's argument:

> The situation this points to is analogous to, and in a sense repeats what we discussed above with respect to author/authorship. Neither these terms, nor the term ›work‹ can – *pace* Eggert – be applied with identical signification and coincident implications to restoration in the fine arts, or architecture, on the one hand, and to the editing of transmissions in language on the other hand. A fundamental distinction instead must be made, one that Eggert does not consider: in restoring works of the fine arts, or architecture, there can never be any going-behind their material existence and presence, meaning also: their existence *as* presence. Editing works (of art) in language, by contrast, can never be accomplished without a preliminary, yet foundational going behind the extant textual materials.[89]

That the restoration of a work of the fine arts should be bound to its physical existence makes sense when that is what is being restored, i.e. set back into a state of being that is assumed to be closer to how it was originally. We can already find complications to that assumption, however. As both Nelson Goodman and Paul Eggert make recourse to the works of Rembrandt, I will by way of example refer to one of his most famous paintings known as *De Nachtwacht* ('The Night Watch'), a title that it presumably acquired because observers mistakenly thought it portrayed a night scene due to a varnish that had darkened over time.[90] Between 2019 and 2021, the Rijksmuseum Amsterdam undertook a

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88 See Paul Eggert, *Securing the Past: Conservation in Art, Architecture and Literature*, Cambridge: Cambridge University Press, 2009.

89 Gabler 2011, 8.

90 A restoration was performed in 1946/47 that removed part of this darkened varnish; this decision was not without controversy, cf. P. J. J. van Thiel, "Beschadiging en herstel van Rembrandts Nachtwacht / The Damaging and Restoration of Rembrandt's Night Watch," in: *Bulletin van het Rijksmuseum* 24/1-2 (1976), 4–13, here 6, and Sheldon Keck, "Some Picture Cleaning Controversies: Past and Present," in: *Journal of the American Institute for Conservation* 23/2 (1984), 73–87, here 83.

painstaking restoration, analysis, and digitization of the work, open to the public locally and virtually.[91] This state-of-the-art restoration effort blurs the boundaries of the physical and the digital, and it also blurs the boundaries between a restoration and a reconstruction, since it used circumstantial evidence – a contemporary copy of the original painting by Gerrit Lundens – as well as an imitation of Rembrandt's style based on machine learning to fill in missing edges.[92] Clearly, there is a distinction to be made here between *conserving* that which has physically survived, *preserving* it for future generations, and *extending* it back into an imagined past. And that distinction is crucial to editorial work of any kind.

Neither Eggert nor Gabler remark on the difference between *restoring* an object and *reconstructing* its content – which may or may not be tied to its appearance but goes behind its appearance, beyond semiotic reasoning. Since Eggert does not discuss pictorial transmission variance of the kind showcased in this book, he cannot re-conceptualize scholarly editions to include a framework for the edition of (audio-)visual works and thus must instead equate the scholarly edition of texts with the restoration of pictorial works in order to claim that both are two types of the same principle of conservation. The misunderstanding at the heart of this parallelization is the one we have already rejected: that only notational (textual) works should exist in an immaterial, ideational way that transcends their material (non-unique) survival. A more fitting

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91 See *Operation Night Watch* by the Rijksmuseum, Amsterdam, <https://www.rijksmuseum.nl/en/stories/operation-night-watch> (accessed 27 August 2023). For an initial news report, see Daniel Boffey, "'Like a Military Operation:' Restoration of Rembrandt's Night Watch Begins," in: *The Guardian* (5 July 2019), online: <https://www.theguardian.com/artanddesign/2019/jul/05/restoration-rembrandt-night-watch-begins-rijksmuseum-amsterdam> (accessed 27 August 2023). For a later report, see John Naughton, "Enjoy the Restored Night Watch, But Don't Ignore the Machine Behind the Rembrandt," in: *The Guardian* (3 July 2021), online: <https://www.theguardian.com/technology/commentisfree/2021/jul/03/enjoy-the-restored-night-watch-but-dont-ignore-the-machine-behind-the-rembrandt> (accessed 27 August 2023).

92 For an interview with Prof. Robert Erdmann and Casper van der Kruit from the Rijksmuseum about the thought process behind this, see Robert Erdmann and Casper van der Kruit, "Operation Night Watch: How Rijksmuseum Tapped AI To Restore A Rembrandt," interview by Fei Lu, in: *Jing Culture & Crypto* (15 July 2021), online: <https://jingculturecrypto.com/rijksmuseum-rembrandt-night-watch-ai-restoration/> (accessed 27 August 2023).

parallel would be to say that pictorial transmission variance, genetic variance, reconstructive concerns, and, more generally speaking, pictorial works that reside outside of traditional author-work definitions are the equivalents of textual editorial concerns, and it would also be more fitting to state that the equivalent of physically restoring a piece of fine art is the physical restoration of a manuscript, an important practice that exists as well and would have no other equivalent left otherwise.

To be clear: The edition of a text, picture, film, or music work can involve the repair and restoration of their carrier materials, but if there is no need for restoration, the edition of these works can proceed *without* any restoration involved. There is a marked difference between a scholarly edition of a text and the restoration of its witnesses, just as there is a marked difference between a scholarly edition of a picture programme and the restoration of its witnesses. Since restoration is something that art and film conservation are often called upon to perform – and it should be noted that restoration is usually carried out by experts in these fields, i.e. archivists and conservators, whereas editions are the domain of scholars usually unfit to carry out any such work, another significant difference that may explain some discursive divergences –, the issue of restoration tends to overshadow other aspects involved in the preservation and presentation of such works. Are there reconstructions of picture works and film works that do not involve efforts of restoration? If there are none, it is not because there could not be. Conflating the edition of something and the restoration of something will effectively consign all the very specific editorial concerns about representing a work in a scholarly manner to a secondary concern; or, at the very least, subject it to a lack of economic viability and relevance *as part of a restoration effort*, from which it should be viewed as something separate in principle, even if it can benefit from it due to the subsequent accessibility and quality of the available material. Paul Eggert's melting of terms, as admirable as it might be in its impetus, harms rather than helps his avowed goal of "[envisaging] the work […] as constantly involved in a negative dialectic of material medium (the documentary dimension) and meaningful experience (the textual dimension), and as being constituted

by an unrolling semiosis over time."[93] Factoring a work's communal perception and construction in its 'afterlife' into its appraisal is sensible, but by mapping it onto the people involved with 'conserving' and thus perpetually 'constituting' a work rather than questioning the modes of its reproduction,[94] Eggert reinforces boundaries: That of a material view on fine arts and architecture and of a non-material view on 'text' – of a material restoration of an object and of an immaterial restoration of a work, so long as that work is textual. Is an edition a restoration? No. It may involve a restoration, but it is a reconstruction, both of a work and its history; sometimes more, sometimes less primarily so. This distinction matters.

Manuscripts are restored. This receives little attention from both Eggert and Gabler because they are so deeply embedded in textual scholarship that the reproducibility of a text, and thus its existence independent of a given carrier material, appears self-evident, although it should be noted that without any extant carrier material, we would have no notion of its existence either. Interestingly enough, the restoration of manuscripts was of much greater interest to scholars and librarians in the 19th century who aspired to make the script on faded folios and palimpsests more readable by treating it with chemical reagents and other experimental mixtures, thereby ruining many of these manuscripts and making them more unreadable, as misfortune would have it.[95]

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93 Eggert 2009, 237.

94 Cf. ibid., 238.

95 For details on the chemicals used, see Robert Fuchs, "The History of Chemical Reinforcement of Texts in Manuscripts: What Should We Do Now?" in: *Proceedings of the Seventh International Seminar Held at the Royal Library, Copenhagen 18th-19th April 2002* (Care and Conservation of Manuscripts; vol. 7), ed. by Gillian Fellows-Jensen and Peter Springborg, Copenhagen: Museum Tusculanum Press, 2003, 159–170. On computational efforts to recover script, see Lindsay MacDonald [et al.], "Multispectral Imaging of Degraded Parchment," in: *Computational Color Imaging: CCIW 2013* (Lecture Notes in Computer Science; vol 7786), ed. by Shoji Tominaga, Raimondo Schettini and Alain Trémeau, Berlin / Heidelberg: Springer, 2013, 143–157, and Christine Voth, "What Lies Beneath: The Application of Digital Technology to Uncover Writing Obscured by a Chemical Reagent," in: *Kodikologie und Paläographie im digitalen Zeitalter 3* (Schriften des Instituts für Dokumentologie und Editorik; vol. 10), ed. by Oliver Duntze, Torsten Schaßan and Georg Vogeler, Norderstedt: Books on Demand, 2015, 47–64. For examples of the damage done to the manuscripts by the use of the chemicals, see Cod. Guelf. 76 Weiss. (Heinemann 4160), Herzog-August-Bibliothek Wolfenbüttel,

These alterations are alterations that conservators and editors have to address in fundamentally different ways; much as they would have had to on a pictorial level, had parts of the *Hortus deliciarum* manuscript survived in a damaged state; and much as they would have to in any such case, where a need for material restoration exists in parallel to a need for a collated interpretation of transmission variance, genetic variance, or variance in previous reconstruction – of an ideational nature. The alterations are obviously alterations to the material, but they are only alterations of a work witness insofar as a carrier material is identified as a work witness and they impact a work witness insofar as it occupies a certain position of completeness or fragmentation in relation to other witnesses of the same so-designated work, unless there is only one witness to begin with. An editor might therefore, where there are several witnesses, choose to ignore such a damaged witness or the damaged parts thereof in an editorial project despite acknowledging its existence and the *lack* of evidence it provides due to its state (evidence for a specific purpose; for the damage is of course evidence of a different kind, of a different history, if viewed through that lens). A conservator will, naturally, have other concerns on their mind: those to do with material conservation and restoration.

It should be emphasized that the main question echoing through this discussion is the question whether the principles of material restoration in art and architecture and ideational reconstruction in editing are related. The answer to that is that they very much are, even if that relation is not one that should be equated, for to do so would mean to silence matters of material restoration in editing, upon which editors may rely but which is distinct from their own activity, and it would also mean to silence matters of ideational reconstruction in art and architecture, wherein a transmission variance wholly independent from later attempts at conservation may exist.

7th/8th century, f. 19r, <http://diglib.hab.de/mss/76-weiss/start.htm?image=00047>, and Cod. 611, Burgerbibliothek, Bern, 5th–8th century, f. 134r, <https://www.e-codices.unifr.ch/de/bbb/0611/134r>.

D.
MAL D'URTEXT

Having spoken of restoration and reconstruction as two distinct albeit related concepts, it has to be acknowledged that they are often conflated in film studies; or rather, that they are performed hand in hand but with an eye towards providing a film watching experience that is as complete as possible, should a film have been edited down in its release history.[96] These editions resemble what we might in editorial theory call *Leseausgaben*, editions with the purpose to be read, perused, or otherwise consumed; not editions that critically engage with their subject, their own process, or their audience on an academic level, outside of providing an introductory essay or similar features.[97] The reasons for this are manifold. Restoring and releasing films is a very costly enterprise and, as Chris Wahl put it, "[o]bviously, there is a big gap between those who are interested in working out critical editions and those who are actually publishing films on DVD."[98] (And Blu-ray and streaming services, one might add.)

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96 This is connected to a fixation on reconstructing 'the original' as well as to a host of other (e.g. copyright) issues, as examined in Vinzenz Hediger, "The Original is Always Lost: Film History, Copyright Industries and the Problem of Reconstruction," in: *Cinephilia: Movies, Love and Memory*, ed. by Marijke de Valck and Malte Hagener, Amsterdam: Amsterdam University Press, 2005, 135–150.

97 Commentary may also take the form of audio tracks by scholars that a viewer can listen to while watching a film. Such commentaries have the advantage of commenting on the film as it goes along, but they also have the disadvantage of having to go along, i.e. a very limited amount of time to address a specific scene before it changes to something else that could be commented upon. Since these commentaries are often conducted by those involved in the production of a film, they also tend to be collections of personal anecdotes in relation to the production history of said film, and if those involved with the film are no longer alive, film historians will often relate those anecdotes as found in their research, unless they are invited to speak on a different aspect. On the matter of recording scholarly commentaries, see Issa Clubb, "And There is a Commentary Track," in: *The Italianist* 32 (2012), 292–295 (Issa Clubb is a producer with the Criterion Collection).

98 Chris Wahl, "Film Versions and Critical Editions: Publishing for the Community of Film Scholars," in: *Critical Editions of Film: Film Tradition, Film Transcription in the Digital Era*, ed. by Giulio Bursi and Simone Venturini, Pasian di Prato: Campanotto Editore, 2008, 72–80, here 77.

Even restorations that were prompted and financed by connoisseurs of the medium, such as the 2009 restoration of the Powell-Pressburger film *The Red Shoes* (1948) that was launched by the famous director and proclaimed fan of the film Martin Scorsese himself,[99] do not necessarily satisfy scholarly needs so much as they satisfy the needs of cinephiles largely unconcerned with matters of critical edition, if not unfamiliar with the underlying philological concept altogether; understandably so.[100] There is a sense of a Lachmannian reach towards the pure original, unencumbered by time and decay, when Scorsese states: "But the techniques we used here are top of the line. So it looks better than new. It's exactly like what the film-makers wanted at the time, but they couldn't achieve it back then."[101]

This may very well be true (and personal acquaintance with the original creators makes it more likely to divine their thoughts), but it introduces its own set of issues, reminiscent of editorial quarrels about 'the original' *Urtext*. In reference to Derrida's *mal d'archive* ('archive

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99 For background on the restoration and how it came to be, see Martin Scorsese, "My Friendship with Michael Powell," interview by Steve Rose, in: *The Guardian* (14 May 2009), online: <https://www.theguardian.com/film/2009/may/14/scorsese-michael-powell-red-shoes> (accessed 27 August 2023).

100 Examples for this are the releases by the *Criterion Collection* for the US market which are of a high quality and geared towards cinephiles but nonetheless not fit for scholarly purposes, or at least not fit for scholarly interests insofar as an interest in critical editions is concerned; we do find Criterion releases discussed in those contexts, however, which might point to the strength of the desideratum (as well as the special position that Criterion releases occupy as commercial releases), cf. Robert Fischer, "The Criterion Collection: DVD Editions for Cinephiles," in: *Celluloid Goes Digital: Historical-Critical Editions of Films on DVD and the Internet. Proceedings of the First International Trier Conference on Film and New Media, October 2002* (Filmgeschichte International; vol. 12), ed. by Martin Loiperdinger, Trier: Wissenschaftlicher Verlag, 2003, 99–108. Another company to mention would be Kino Lorber but there are, of course, others besides. In the European market, Eureka Entertainment fulfils a similar role, especially with its Masters of Cinema line. The British Film Institute (BFI) will also release films, while in the German context, the Friedrich-Wilhelm-Murnau-Stiftung will also sometimes release their own restorations of films in their portfolio (it should be noted that these releases, generally speaking, do not contain much in the way of bonus features). Some film studios release their own titles from the vault, such as Warner Bros. with the Warner Archive Collection. This just to give a short impression.

101 Scorsese 2009.

fever'),[102] we could think of it as a *mal d'urtext* – a nostalgic fixation, "an irrepressible desire to return to the origin"[103] of creative intent and creation. Only, what is the original? Cases that 'only' require restoration may be relatively unambiguous. Other cases, where there was a theatrical release that was later destroyed, as happened to *Anders als die Andern* (1919), may be relatively unambiguous as well; there, reconstruction serves to counter a concentrated suppression of material. The films censored due to the Motion Picture Production Code, on the other hand, already tell a different story. As mentioned, *Baby Face* (1933) was censored after a limited run and before its wide release – most audiences at the time would not have seen the version that we now commonly see. This will not be relevant to the general public, but it is relevant for scholars with an interest in pre-code films. More egregious still is the case of *The Sign of the Cross* (1932): The uncensored version, released on Blu-ray in 2020[104] and before that date available on DVD for many years, is the only version today's audiences are likely to encounter. And yet there is the curious fact that the film underwent extensive changes throughout its theatrical release history, being altered substantially for a reissue in 1944. Director DeMille shot a new prologue of around ten minutes, and while the main film is set in ancient Rome, the same cannot be said for the additions:

> The prologue takes place in the present of 1944. An American B-17 bomber drops propaganda leaflets over the eternal city to inform Roman citizens that the Allies will be bombing only military stations. As they fly over Rome, two chaplains, a Protestant (Lloyd) and a Catholic (Costello), reminisce about ancient Rome and Nero's persecution of tens of thousands of Christians. Parallels are drawn between Nero and Hitler. The final shot of the prologue is of four planes flying off into the distance. A short epilogue shows the American bombers heading back

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102 See Jacques Derrida, *Mal d'archive: une impression freudienne*, Paris: Éditions Galilée, 1995.
103 Jacques Derrida, "Archive Fever: A Freudian Impression," transl. by Eric Prenowitz, in: *Diacritics* 25/2 (1995), 9-63, here 57, online: <https://doi.org/10.2307/465144>.
104 See <https://kinolorber.com/product/the-sign-of-the-cross-blu-ray> (accessed 28 August 2023).

> to North Africa--mission accomplished. […] The NYT reported on 2 Apr 1944 that some scenes were omitted from the first version to fit the prologue, but it is unclear which scenes were cut.[105]

Before the discovery and restoration of the 1932 version, it was this version, framed by WWII propaganda, that audiences saw on television for decades – since then, the situation has reversed, with the 1944 version having been superseded by the original. It does not appear as if there is any way to view the 1944 version anymore, at least not as a member of the public. That might be preferable from an artistic point of view (I dare say that the film is mediocre to begin with, if outrageous), but it is not preferable from a scholarly point of view. Effectively, film versions – should they still exist in an archive or another – are as accessible to the average scholar as texts in manuscripts were in the 19th century, before their collation and transcription. Here, we see the danger of conflating restoration, reconstruction, and edition. If nothing is compared or comparable, if nothing is annotated or explicated or, indeed, classified and described, if nothing is measured, counted, and related, then the commentary upon it does not a base for scholarly engagement make.

We should not, of course, forget that restoration is not a process that occurs by wave of a magic wand but that it is a very demanding technical effort, involving highly specialized experts and skill, requiring decisions, insight, and forethought. Karin Herbst-Meßlinger has detailed this for the collection of materials pertaining to F. W. Murnau's *Tabu: A Story of the South Seas* (1931), made available online.[106] More is the pity that such information is not provided with regular film releases. This is where the reconstruction of fragmentary transmission from multiple

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105 From the entry in the catalogue of the *American Film Institute* (AFI): 'The Sign of the Cross,' in: *AFI Catalog of Feature Films*, online: <https://catalog.afi.com/film/3859-the-signofthecross> (accessed 28 August 2023).

106 Cf. Karin Herbst-Messlinger, "Zur Entstehung von F.W. Murnaus Tabu: Die Edition der Outtakes. Eine transdisziplinäre Online-Publikation der Deutschen Kinemathek," in: *Kritische Film- und Literaturedition: Perspektiven einer transdisziplinären Editionswissenschaft* (editio / Beihefte; vol. 51), ed. by Ursula von Keitz, Wolfgang Lukas and Rüdiger Nutt-Kofoth, Berlin / Boston: De Gruyter, 2022, 251–272, here 255–257, online: <https://doi.org/10.1515/9783110684605-013>.

sources enters the equation, as it did in the case of the 2012 Pathé restoration of Raymond Bernard's *Les Misérables* (1934) epic.[107] Originally almost five hours long, the film was halved in 1935, re-released in 1944 in a version that was still significantly truncated, and only restored to anything resembling its original runtime in the 1970s when the director, half-blind by that point, was asked by the French Broadcasting Company to reconstruct it from memory.[108] Despite these efforts, there were and are some scenes missing to this day, and when Pathé undertook a new 4K digital restoration based on the original negative, they were able to reassemble some of the scenes such as Valjean's theft of the Bishop's candle sticks – from different sources, none of which are documented in supplementary material, either on the basis of scenes or shots. The same is true for the 2006 study edition of *Metropolis* (1927) that I have briefly mentioned before. It aspired to be a "prototype for critical editions"[109] but more than a decade later, Hoffmann's prediction rings true that the edition would "remain a solitary […] due to the high costs of several hundred thousand euros and the varying material condition of secondary sources"[110] – although those may not be the only reasons or even the primary reasons for the singular status of the *Metropolis* study edition. What good, one might ask, is an emendated edited text or film, if not every intervention or compilation is sourced specifically? What level of detail should it be sourced to? (And we may differentiate here between that which is documented internally and publicly.)

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107 See <https://www.pathefilms.com/dvd/lesmiserables> (accessed 28 August 2023).

108 Cf. Michael Koresky, "Eclipse Series 4: Raymond Bernard," in: *The Criterion Collection: On Film* (24 July 2007), online: <https://www.criterion.com/current/posts/587-eclipse-series-4-raymond-bernard> (accessed 28 August 2023).

109 Anna Bohn, "Aesthetic Experience in Upheaval: Perspectives on Critical Film Editions Based on the Example of Metropolis and Battleship Potemkin," in: *Critical Editions of Film: Film Tradition, Film Transcription in the Digital Era*, ed. by Giulio Bursi and Simone Venturini, Pasian di Prato: Campanotto Editore, 2008, 24–39, here 30; see also 27–30.

110 Hoffmann 2007, 455, original (whole sentence): "Insgesamt ist sowohl wegen der immensen Kosten von mehreren hunderttausend Euro und unterschiedlichen Materiallagen der Sekundärquellen zu befürchten, dass diese anregende und wichtige Studienfassung nicht der erhoffte Prototyp für eine umfassende Aufarbeitung des Filmerbes werden, sondern ein Solitär bleiben wird."

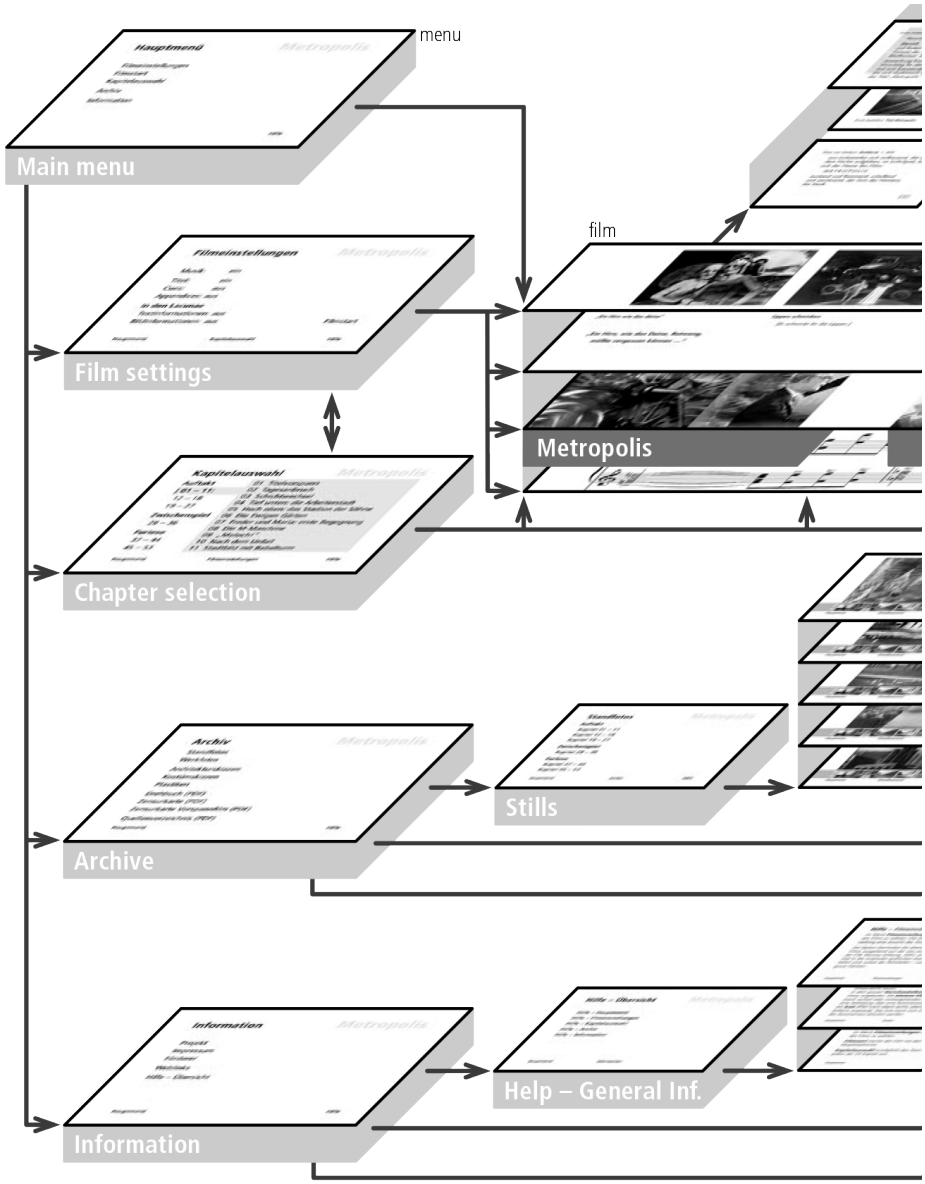


FIG. 42: Detail from the navigation model of the 2006 study edition of *Metropolis* (1927), dir. by Fritz Lang; from Anna Bohn and Enno Patalas (Eds.), *DVD Metropolis Study Edition*, booklet, Berlin: Universität der Künste Berlin, Institut für zeitbasierte Medien, 2006, 18 (for the full figure, see 18–19).

The 2006 study edition of *Metropolis* is, by its own admission, situated "between a historical-critical edition and a reader's copy"[111] ('reader's copy' referring to the concept of *Leseausgabe*). It visually presents lacunae in the fragmented extant material by showing a grey screen for the duration of the missing segments and allows viewers to toggle descriptive intertitles as well as additional archival information and commentary.[112] This layering of information can be seen in the navigation model of the edition where the menu leads to familiar branches like film settings and chapter selection as well also to an innovative archive of text documents and a gallery of stills (see **FIG. 42**). Such an approach could still serve as an inspiration for future scholarly film editions, given how intuitive it is, but it does not provide an answer to the question how variant transmission might be addressed – which, in a traditional scholarly edition, would often be visualized in the form of a synoptic view and, in most cases, in the form of an *apparatus criticus*. As noted before, it also does not take the reconstructive history of the work into account by displaying it explicitly (meaning the idea of an 'edition of editions'), despite being in itself a primarily reconstructive effort. Admittedly, such remarks are easy in hindsight and in theory only. Some developments cannot be foreseen. Shortly after the study edition was published, most of the film's missing parts resurfaced in a museum in Argentina in 2008, leading to a new restoration, titled *The Complete Metropolis* and released in 2010.[113] Since neither the releases before the

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111 Anna Bohn, "Edition of a Torso: Aesthetic Experience in Upheaval; Film Edition and Edition Philology," in: *Booklet DVD Metropolis Study Edition*, ed. by Anna Bohn and Enno Patalas, Berlin: Universität der Künste Berlin, 2006, 8–11, here 9.

112 Cf. ibid., 9–11. See also Björn Speidel, "Le tableau disparu," in: *Booklet DVD Metropolis Study Edition*, ed. by Anna Bohn and Enno Patalas, Berlin: Universität der Künste Berlin, 2006, 12–14.

113 See, for news reports at the time, Erik Kirschbaum, "'Metropolis' Footage Found in Argentina," in: *Variety* (2 July 2008), online: <https://variety.com/2008/film/news/metropolis-footage-found-in-argentina-1117988440/> (accessed 28 August 2023). For the perspective of the *ZEITmagazin* which was involved in the discovery, see [editors], "Fritz Lang's 'Metropolis:' Key Scenes Rediscovered," in: *ZEITmagazin* (2 July 2008), online: <https://www.zeit.de/online/2008/27/metropolis-vorab-englisch> (accessed 28 August 2023). For more information on the discovery and restoration, see Fernando Martín Peña, "Metropolis Found," in: *Undercurrent* 6 (2010), online: <http://fipresci.hegenauer.co.uk/undercurrent/issue_0609/pena_metropolis.htm> (accessed 4 October

2006 study edition nor the releases afterwards have been scholarly editions, the 2006 study edition still occupies a valuable space in the film's reception and presentation. It also, however, calls into question whether the reconstruction of 'completeness' can be a purpose onto itself. Much as a scholarly edition of a text is not meant to be read, a scholarly edition of film should perhaps not be meant to be viewed – reading and viewing here referring to a linear experience of 'the work' rather than an intervention beckoned by the display of all the histories and evidences that have led to the construction of 'the work' as understood and (re-) configured at a given moment in time.

It might be tempting, at this point, to launch into a discussion of practical needs and possibilities, e.g. whether a mostly linear medium like a DVD or Blu-ray disc is equipped to convey conceptual models of a scholarly film edition and how a dynamic web environment might be differently or better equipped for such a task. Film studies have produced a wealth of tools that could be utilized, in particular when it comes to the annotation of film,[114] and this could be further spun into project-specific ideas of implementation. The question is not, however, and never has been, one of tools or technologies. In the dual format release of *Faust – eine deutsche Volkssage* (1926) by Eureka from 2014 (Masters of Cinema; 78), both the domestic version and the export version are included.[115] These versions differ in many regards that change the film

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2020; not accessible anymore 28 August 2023; see the archived version in the Internet Archive), and Chris Fujiwara, "A Tale of Two Cities," in: *Film Comment* 46/3 (2010), 54-55, online: <https://www.filmcomment.com/article/a-tale-of-two-cities-metropolis-restored/> (accessed 28 August 2023). For more information on the 2010 release of *The Complete Metropolis*, see also the accompanying exhibition in the *Deutsche Kinemathek*, Tino Schmidt, "'The Complete Metropolis:' Eine Ausstellung der deutschen Kinemathek in Berlin vom 21.01. bis 25.04.2010," in: *Zeitgeschichte-Online* (1 February 2010), online: <https://zeitgeschichte-online.de/geschichtskultur/complete-metropolis> (accessed 28 August 2023).

114 Some that come to mind are MemoRekall (see <https://memorekall.com/en/> (accessed 28 August 2023)), Celluloid (see <https://celluloid.huma-num.fr/> (accessed 28 August 2023)), and Advene (see <http://www.advene.org/> (accessed 28 August 2023)). A very useful comparison of different available tools can be found in Rémy Besson [et al.], "L'annotation vidéo pour la recherche. Usages et outils numériques," white paper from the consortium CANEVAS, 2023, online: <https://hal.science/hal-04048886>.

115 An earlier 2007 Eureka release had already contained both versions as well, cf. Richard Burt, *Medieval and Early Modern Film and Media*, Basingstoke [et al.]: Palgrave

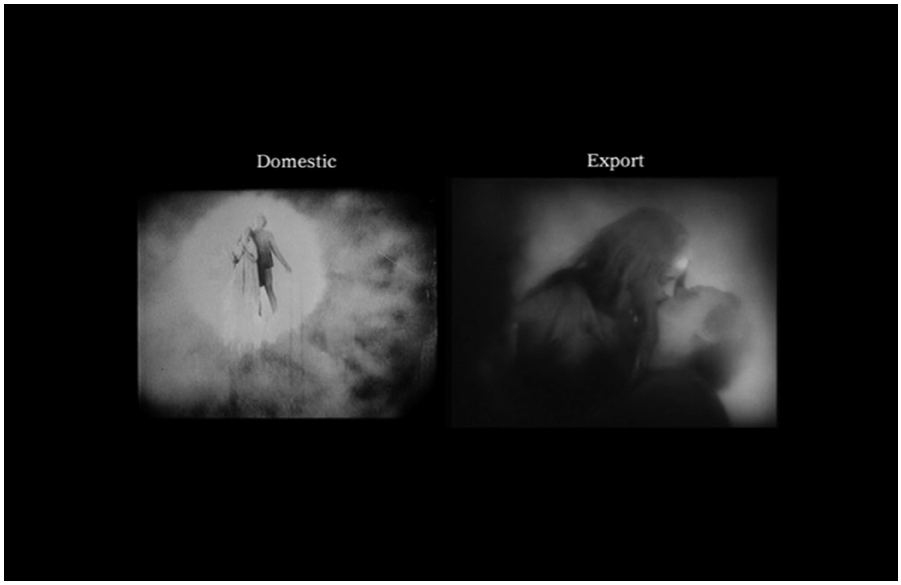


FIG. 43: Comparison of the domestic and export versions of *Faust – eine deutsche Volkssage* (1926), ed. by Bradley Richards, prod. by Nick Wrigley, written and dir. by R. Dixon Smith; screen capture, Blu-ray: Eureka (Masters of Cinema; 78), 2014, time stamp 0:24:14 (bonus feature).

considerably and the Eureka edition addresses this by describing the differences and showing them side by side in a bonus feature (see **FIG. 43**). If the reconstructed German cut and the American cut were the only noteworthy witnesses of the work, such an edition would already cover much ground, despite not being designed to function like a scholarly edition. With this particular film, a curious case of intertitle variation complicates matters. The production studio UFA was not enamoured with the intertitles written for the film by Hans Kyser and approached Gerhart Hauptmann, Nobel laureate in literature and one of the most

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Macmillan, 2008, 110. There was more than one version for international markets, cf. Edwin Gentzler, *Translation and Rewriting in the Age of Post-Translation Studies*, London / New York: Routledge, 2016, 99f. The export version on this release refers to the version for the US market. "Using the nitrate duplicate negatives printed by UFA in 1926 (and an array of international sources) Murnau's favoured domestic German version of Faust [was] meticulously reconstructed by Luciano Berriata for Filmoteca Espanola" (<https://eurekavideo.co.uk/movie/faust/> (accessed 28 August 2023)) and made available in the Eureka release.

prestigious authors in Germany at the time, to write new intertitles.[116] Hauptmann raised the fee to an astonishing 40,000 mark and delivered alternative intertitles in verse – alas, UFA judged these to be even worse and decided to revert to the Kyser text, after much publicized controversy in the newspapers, including an open letter by Kyser himself.[117] Hauptmann's verses may not have found their way onto the big screen, but they did find their way into a printed brochure that was handed out at the premiere, and in 2020, they finally found their way onto the small screen in an edition of the film by the *Filmmuseum München* in their aforementioned series *Edition Filmmuseum* (entry 114).[118] Although we might call this a *reconstructive edition*, it is rather striking that the reconstructed film – by replacing Kyser's intertitles with Hauptmann's rejected intertitles – presents a view on the work that never quite existed before, except for a brief period where the film must have been shown thus to the studio executives.[119] More notably still, without a scholarly edition, viewports are scattered, each new release by different institutions and companies adding new perspectives and points of access to a disjoined universe of information. A scholarly edition can never be the one place that gathers it all, the one edition that does it all, but it can be the hinge between the evidence that is known and the evidence that must be shown. Of a work – and beyond a work? (Is Murnau's *Faust* with intertitles by Hauptmann still the same work as it is with intertitles by Kyser? That is the question.)

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116 Cf. Klaus Kreimeier, *The Ufa Story: A History of Germany's Greatest Film Company, 1918–1945*, transl. by Robert and Rita Kimber, Berkeley [et al.]: University of California Press, 1999, 137.

117 Cf. ibid., as well as Christiane Schönfeld, *The History of German Literature on Film*, London [et al.]: Bloomsbury, 2023, 133.

118 See *Faust. Eine deutsche Volkssage* (Edition Filmmuseum; 114), ed. by the Filmmuseum München and the Goethe-Institut München, supervised by Stefan Drößler, <https://www.edition-filmmuseum.com/product_info.php/info/p196_Faust--Eine-deutsche-Volkssage.html> (accessed 28 August 2023) [first edition December 2020].

119 Stefan Drößler notes that censorship records indicate a number of changes to the film in the months leading up to its premiere and that "[i]t is not clear whether the film was ever publicly screened with Hauptmann's titles" (<https://www.edition-filmmuseum.com/product_info.php/language/en/info/p196_Faust--Eine-deutsche-Volkssage.html> (accessed 28 August 2023)).

E.
VERSIONS BEYOND WORK

In German film studies, Joseph Garncarz was one of the first, if not the first scholar to theorize about variant film versions.[120] In his dissertation, published in 1992, he differentiated between different versions of versions (*Fassungen*) and different types of variation.[121] Elementary to those delineations is his emphasis on "significant variation" as the constituting element of film versions.[122] A significant variation, in his definition, is one that occurs on purpose instead of arbitrarily through damage to the material, for example.[123] These purposeful changes are carried out for normative reasons that pertain to making films "legible for audiences speaking different languages, making them aesthetically, morally, politically, or religiously acceptable, or lending them authenticity."[124] Given that this is a very intentionalistic understanding of film versioning, it should come as no surprise that the changes made to films such as *The Sound of Music* (1965) or *Casablanca* (1942) when dubbed and edited for the German market in ways that distorted their original meaning occupy a large portion of Garncarz's study.[125]

Such analysis and classification of film versions is, without doubt, of great value to an editorial film theory interested in variant transmission. However, harking back to the transmission variance in medieval picture programmes, one might ask: Does it matter *why* variation occurs rather than *that* it occurs? It matters in many contexts, but does it matter in the context of recording said variation in a structured way? The classification of variance that Ursula von Keitz and Wolfgang Lukas have

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120 Cf. Wahl 2008, 75.
121 See Joseph Garncarz, *Filmfassungen: Eine Theorie signifikanter Filmvariation* (Studien zum Theater, Film und Fernsehen; vol. 16), Frankfurt am Main [et al.]: Peter Lang, 1992.
122 Ibid., 10.
123 Cf. Garncarz 1992, 13.
124 Ibid., 14, original (extended): "Mit der Variation eines Films ist beabsichtigt, ihn an eine bestimmte Norm anzupassen. Es entspricht einer Norm, daß Filme für verschiedensprachige Publika verständlich, daß sie ästhetisch, moralisch, politisch oder religiös akzeptabel oder daß sie authentisch sein sollen."
125 Cf. Garncarz 1992, for example, 109–114 and 126–128.

proposed indicates that the splintered material circumstances of survival and the complex collaborative histories of production that we find with film works (as opposed to, for example, the picture works discussed in the last chapter) require a more thorough understanding of processes of creation and transmission than the description of surfaces of depiction would allow.[126] On that level, the level of both genetic variance and transmission variance, differentiated along the phases of creation (development, production, post-production, distribution) as well as the technical components and departments involved in production and transmission, the material basis for an edition emerges out of a reconstruction of dependencies and lineages. Tracing this closely from and towards archival inventories, where the evidence as such is clear, carries us away from an editorial question that may appear banal: What do we edit? A work? Work witnesses? Work versions?

To recall: With the picture programmes, it seemed sensible to demarcate them as works not through a 'sameness of spelling' but through a 'sameness of context' – e.g. by (1) being transmitted in the same medium, e.g. manuscripts, (2) being transmitted alongside a certain text or a certain configuration of text, (3) being reproduced manually with the *intent* of reproduction – 'reproduction as is', a certain degree of permissible alteration as well as incidental alteration notwithstanding. This definition accounts for variation that occurs between different work witnesses as opposed to variation between works sharing a common visual reference system. If we are to look at films primarily through the concept of film *versions* rather than film *witnesses*, then the sameness of context is superseded by a *contextual transformation*. This does not mean that there is no sameness of context at all anymore; film versions are still transmitted in the same medium and they still adhere to an intent of reproduction. The difference is, however, that the semantic variation takes on such a significance that it almost begs the question whether it might not have

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126 Cf. Ursula von Keitz and Wolfgang Lukas, "Varianz in Literatur und Film: Ein Versuch," in: *Kritische Film- und Literaturedition: Perspektiven einer transdisziplinären Editionswissenschaft* (editio / Beihefte; vol. 51), ed. by Ursula von Keitz, Wolfgang Lukas and Rüdiger Nutt-Kofoth, Berlin / Boston: De Gruyter, 2022, 57–86, here 84f., online: <https://doi.org/10.1515/9783110684605-005>.

birthed a new work altogether. We saw this in the example of the reappropriated *Vaticinia de summis pontificibus*, equipped with new verses by Hans Sachs, and we see it in the example of Murnau's *Faust*, equipped with new verses by Gerhart Hauptmann.

There are several things to consider: First of all, versions of a work cannot be edited without witnesses of the versions. Consequently, all editions rely on witnesses. Second of all, semantic variation is only but one form of variation. Third of all, the traditional work paradigm must not dictate any and all editorial concerns. Without losing sight of the focus of this book which still lies with editions being demarcated by a *work* context, we might digress for a moment and anticipate what that last note could mean prospectively.

Anna Bohn has proposed the 'contextualization' of archival materials – film documents from the First World War, to be precise – in the form of multimedial editions.[127] Beyond that, films with their medium-specific versioning of a *Stoff* or *sujet* in the form of adaptations and remakes are, similar to picture programmes with their interpictoriality, open to editorial approaches wherein the works themselves are treated as versions of a very specific subject matter with significant overlap in textual and visual content in addition to the variation occurring automatically by having two different actors play the same character, for example.[128] Where there is no criterion for a sameness of spelling outside of mechanically copying a material and identifying copy and original as essentially one and the same, boundaries inevitably become more elastic – viewed alternatively, they become very rigidly restricted to 'the work' in concomitance with its singular physical existence and instantiation.

In his essay on early motion pictures, Erwin Panofsky inadvertently touched on the topic when he compared the production of films to the production of theatre:

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127 See Bohn 2015, 11–28.

128 On the topic of remakes and adaptations, see Kathleen Loock and Constantine Verevis (Eds.), *Film Remakes, Adaptations and Fan Productions: Remake/Remodel*, Basingstoke [et al.]: Palgrave Macmillan, 2012, and Thomas Leitch (Ed.), *The Oxford Handbook of Adaptation Studies*, Oxford [et al.]: Oxford University Press, 2017.

> The playwright writes in the fond hope that his work will be an imperishable jewel in the treasure house of civilization and will be presented in hundreds of performances that are but transient variations on a 'work' that is constant. The script-writer, on the other hand, writes for one producer, one director and one cast. Their work achieves the same degree of permanence as does his; and should the same or a similar scenario ever be filmed by a different director and a different cast there will result an altogether different 'play.'[129]

This is something worth discussing. Is there a significant difference between John Barrymore's Hamlet and Laurence Olivier's Hamlet, only because one was famed on stage and the other on film?[130] If there is, it is the difference between one being transient and the other captured for posterity. As the matter of restoration has shown, such material survival is fragile as well, but it would seem to me that the concept of *permanence* is a good reminder of Zumthor's concept of *mouvance*.[131] Scholarly editions pierce the *mouvance* of a work by inscribing it in one form and they pierce the permanence of a work by showcasing its variant or fragmentary transmission. Depending on the type of edition and the type of document being edited, e.g. a corpus of letters instead of a 'work', this may not be true for all of them, but it would seem to be true for many.

What does that mean, for example, for films that are adaptations of stage plays, meaning that they were not specifically written "for one producer, one director and one cast"[132] any more than they were written for one troupe of actors like the King's Men?[133] Would it not be possible to create a comparative edition of film versions of, say, *Macbeth*, ranging from Orson Welles' 1948 version to Akira Kurosawa's 1957

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129 Panofsky 1947/1966, 28.
130 See, for information on these performers and performances, Michael A. Morrison, "John Barrymore's 'Hamlet' at the Haymarket Theatre, 1925," in: *New Theatre Quarterly* 7/27 (1991), 246–260, and Patrick J. Cook, *Cinematic Hamlet: The Films of Olivier, Zeffirelli, Branagh, and Almereyda*, Ohio: Ohio University Press, 2011, 23–64.
131 Cf. Zumthor 1972, 65–75.
132 Panofsky 1947/1966, 28.
133 For information on the King's Men, see Andrew Gurr, *The Shakespeare Company, 1594–1642*, Cambridge: Cambridge University Press, 2004, and Lucy Munro, *Shakespeare in the Theatre: The King's Men*, London [et al.]: Bloomsbury, 2020.

蜘蛛巣城 ('Throne of Blood')?[134] Text beside films and pictorial illustrations, a history of adaptations, reconfigurations, and readings? And would it not be equally imaginable to create a comparative edition of certain stage productions in a reconstructive vein, i.e. based on circumstantial evidence that does have a permanence to it even if the performativity of the productions does not, meaning stage designs and models, photographs, annotated rehearsal scripts, costumes, newspaper clippings, and so on? This type of thinking moves editions closer to curated archives of material, but Paul Eggert has already shown that the 'archival impulse' and the 'editorial impulse' are interrelated; meaning that they occupy different spaces on the same spectrum, even if the progression from an archive to an edition is unidirectional.[135] In fact, multimedial editions that bring together that which is otherwise only related on a level of bibliographical cataloguing or scholarly analysis in prose would seem to run contrary to an 'archival impulse' that has to take the situation of rights, legalities, and logistics into account. (In that sense, these musings are entirely naïve, of course, but it is not the purpose of this chapter nor this book to be pragmatic, first and foremost. Rather, it should be the role of scholars to ask: How can we make webs of meaning visible? How can we experience that which is gone? What does it say about the times and places it came from?)

That the relationship of theatre plays and films is an especially close one is not a novel thought. We actually do find recorded (and thereby made permanent) stage plays included in releases of film adaptations. Such is the case for the Criterion release of Ernst Lubitsch's *Design for*

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134 See Anthony Davies, *Filming Shakespeare's Plays: The Adaptations of Laurence Olivier, Orson Welles, Peter Brook, Akira Kurosawa*, Cambridge: Cambridge University Press, 1988; Judith R. Buchanan, *Shakespeare on Film*, London / New York: Routledge, 2014, 71–89 [originally published 2005]; and Tony Williams, "Macbeth," in: *Senses of Cinema* 38 (2006), online: <http://sensesofcinema.com/2006/cteq/macbeth-2/> (accessed 28 August 2023).

135 Cf. Eggert 2019. I take umbrage to the notion of a 'slider' between an edition and an archive and I wonder whether 'an archive' might not be subsumed by an edition as much as it might exist outside of any editorial concerns. For background on Paul Eggert's longstanding investment in the concept of editorial archives, see also Paul Eggert, "Versions and Versioning: A Critical Archive of D.H. Lawrence," in: *Archiv für das Studium der neueren Sprachen und Literatur* 254 (2017), ed. by Jens Haustein [et al.], 82–95.

Living (1933), a film based on Noël Coward's play by the same name, adapted for the screen by scriptwriter Ben Hecht who famously quipped that he had "[left] only one line of Noël's [...] in the screenplay and defied Noël to find it. 'I shall not,' retorted Coward, 'even bother to find the film.'"[136] And yet, to what would have been his chagrin, no doubt, the Blu-ray from the Criterion Collection contains not only Lubitsch's Hollywood version but also a "British television production of the play *Design for Living* from 1964, introduced on camera by playwright Noël Coward."[137] What would be the purpose, if not to compare? And why would that not be the task of scholars, who need access to that which ought to be compared? In a scholarly edition, one might have included further materials, annotations, and modes of comparison, but the idea remains the same. Even though we are moving between two distinct works here, they are entangled because one was based on (and licensed to adapt) the other. A genetic edition of the film would necessarily have to reason with its origin. Another example for this would be DeMille's *The Sign of the Cross* (1932) where we have already seen a variance in transmission. Genetic variance, transmission variance – often, these go hand in hand. *The Sign of the Cross* (1932) was an adaptation of a stage play by that name (1895), written by Wilson Barrett, and had already been adapted into a silent film in 1914.[138] As has been observed elsewhere, the play bears a striking resemblance to Henryk Sienkiewicz's novel *Quo vadis* (1895/96) which was first published in Polish around the very same time as the stage production was first performed.[139] The

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136 Sheridan Morley, "Introduction," in: Noël Coward, *Collected Plays (vol. 3): Design for Living, Cavalcade, Conversation Piece, Tonight at 8.30 (i), Still Life*, London [et al.]: Bloomsbury, 2014, vii–xvii, here x [introduction from 1998].

137 *Design for Living* (1933), dir. by Ernst Lubitsch, Criterion (Collection; 592), <https://www.criterion.com/films/27872-design-for-living> (accessed 29 August 2023).

138 Cf. 'The Sign of the Cross,' in: *AFI Catalog of Feature Films*, online: <https://catalog.afi.com/film/16528-the-signofthecross> (accessed 29 August 2023).

139 It is unclear how any plagiarism could have occurred in either direction but there is evidence that the play preceded the novel rather than the other way around, cf. Panayiota Mini, "Representations of the Christian Female Virtue in Roman Film Epics: The Sign of the Cross (1932) and Quo Vadis (1951)," in: *The Reception of Ancient Virtues and Vices in Modern Popular Culture: Beauty, Bravery, Blood and Glory* (Metaforms; vol. 11), ed. by Eran Almagor and Lisa Maurice, Leiden: Brill, 2017, 231–252, here 232, fn. 6, online: <https://doi.org/10.1163/9789004347724_011>.

novel was adapted into films many times, most famously in 1951,[140] directed by Mervyn LeRoy and starring Peter Ustinov as Emperor Nero (in DeMille's film, Nero is played by Charles Laughton). While there are some differences between the stories, they "resemble one another to such an extent that some […] discuss the two works as if they were the same."[141] Are they the same? No. But they are related, and interest has treated them as such even when representation has not.

In the case of *Berlin Alexanderplatz*, where there is a novel by Alfred Döblin from 1929, an audio drama from 1930 that Döblin collaborated on (which did not air at the time but was preserved on shellac records), and a film adaptation from 1931 with a script co-written by Döblin, Rüdiger Nutt-Kofoth and Anna Bohn have spoken of a *Werkkomplex* ('work complex' or 'set of work(s)') and a *Werk-Netz* ('work network' or 'net of work') respectively to describe the shifting of multimedial boundaries.[142] These words, applied to an example where the connective tissue between different versions of a work (different works of a story?) is provided by the central person of the author and the temporal closeness of creation, constitute a very gentle call for a renewal of editorial foci. It is unclear to me whether it should feel radical to think beyond this. So many examples of multimodal transmission variance come to mind, all with their own specific manifestations of a shared core element.

In 1954, the film *Carmen Jones*, directed by Otto Preminger, adapted a Broadway version (1943) of George Bizet's opera *Carmen* (1875) that changed the setting of the narrative to focus on African-American

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140 See 'Quo Vadis,' in: *AFI Catalog of Feature Films*, online: <https://catalog.afi.com/film/50257-quo-vadis> (accessed 29 August 2023).

141 Mini 2017, 232.

142 Cf. Rüdiger Nutt-Kofoth, "Plurimedialität, Intermedialität, Transmedialität: Theoretische, methodische und praktische Implikationen einer Text-Ton-Film-Edition von Alfred Döblins Berlin-Alexanderplatz-Werkkomplex (1929–1931)," in: *Aufführung und Edition* (editio / Beihefte; vol. 46), ed. by Thomas Betzwieser and Markus Schneider, Berlin / Boston: De Gruyter, 2019, 183–194, online: <https://doi.org/10.1515/9783110639261-015>, and Anna Bohn, "Werk-Netze Berlin Alexanderplatz: Perspektiven der Vernetzung mit Normdaten und Identifikatoren beim Online-Zugang zu Filmen," in: *Kritische Film- und Literaturedition: Perspektiven einer transdisziplinären Editionswissenschaft* (editio / Beihefte; vol. 51), ed. by Ursula von Keitz, Wolfgang Lukas and Rüdiger Nutt-Kofoth, Berlin / Boston: De Gruyter, 2022, 129–164, online: <https://doi.org/10.1515/9783110684605-008>.

military personnel during the Second World War; George Bizet's score was retained but the book and lyrics were rewritten by Oscar Hammerstein II; and to complicate matters further, Bizet's opera had itself been an adaptation of a novella (1845) by Prosper Mérimée.[143] Musical films and musical theatre might warrant special attention due to their unique modes of audio-visual storytelling.[144] Another matter to consider would be the combination of remake and adaptation, such as in the case of the Hollywood film *Gaslight* (1944) which was a remake of a British film of the same name from 1940 which in turn was an adaptation of a stage play from 1938.[145] And when the French poetic realist film *Pépé le Moko* (1937) was remade in Hollywood as *Algiers* (1938), the filmmakers not only reused parts of the soundtrack but of the footage as well; this is to not even mention the fact that the filmmakers of *Casablanca* (1942) heavily borrowed from the concept a short while later.[146]

While such examples might seem too broadly chosen at first glance – and there are many more, particularly when we turn our attention to lesser known and researched films –, they do point in a direction that is relevant for the edition *of works* as well. Consider *Der Kurier des Zaren* (1936). This adaptation of Jules Verne's novel *Michel Strogoff* (1876) was shot simultaneously in German and in French, with Richard Eichberg directing the German version and Jacques de Baroncelli the French

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143 See Susan McClary, *Georges Bizet: Carmen*, Cambridge: Cambridge University Press, 1992, and Kirsten Möller, Inge Stephan and Alexandra Tacke (Eds.), *Carmen: Ein Mythos in Literatur, Film und Kunst*, Köln [et al.]: Böhlau, 2011.

144 A different type of variance that we can see in musical films is exemplified by *Seven Brides for Seven Brothers* (1954), directed by Stanley Donen, which was shot simultaneously in two different screen formats, cf. Tim Carter, "Lost in Translation: Rodgers and Hammerstein's Carousel on the Silver Screen," in: *The Oxford Handbook of Musical Theatre Screen Adaptations*, ed. by Dominic McHugh, Oxford [et al.]: Oxford University Press, 2019, 515–542, here 529. While this might not be unique to musical films, blocking scenes for two different formats becomes a greater challenge when group dance numbers have to be taken into consideration, for example.

145 See Andrew Sarris, "Two or Three Things I know About Gaslight," in: *Film Comment* 12/3 (1976), 23–25.

146 See Christian Vivani, "Julien Duvivier entre Paris et Hollywood: Le cheminement des images," in: *Revue française d'études américaines* 115 (2008), 121–136, and David I. Crossvogel, *Didn't You Used to be Depardieu? Film as Cultural Marker in France and Hollywood* (Framing Film / The History of Art and Cinema; vol. 5), New York [et al.]: Peter Lang, 2002, 23–36.

version.[147] Of the cast, only the main actor Adolf Wohlbrück (later known as Anton Walbrook) appeared in both versions speaking both languages; the other characters were played by German-, respectively French-speaking actors and actresses.[148] Yet another alternate version was shot one year later in Hollywood under the title *The Soldier and the Lady* (1937), again with Adolf Wohlbrück reprising his role. This remake allegedly reused footage from the French and German versions, shot in Bulgaria[149] – I say allegedly because 'the film' is, to my knowledge, not commercially available in all its versions and certainly not in any comparative way, shape, or form.[150] This is a fate shared by many if not most *multiple-language version films*, short MLV.[151] A phenomenon

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147 The German and French version are often named in conjunction. That Baroncelli directed the French version is acknowledged in Dayna Oscherwitz and MaryEllen Higgins, *The A to Z of French Cinema*, Lanham [et al.]: Scaregrow Press, 2009, 38. That Eichberg directed the German version is mentioned in contemporary reviews in the *Österreichische Film-Zeitung* 11 (13 March 1936), 4, and the *Neue Freie Presse* 25683 (11 March 1936), 10. Confirmation that *Der Kurier des Zaren* / *Michel Strogoff* was a Franco-German MLV can be found in the entry on Adolf Wohlbrück in *The Concise CineGraph: Encyclopaedia of German Cinema*, ed. by Hans-Michael Bock and Tim Bergfelder, New York / Oxford: Berghahn Books, 2009, 537f. Another entry on Adolf Wohlbrück in the *International Biography Dictionary of Central European Emigrés 1933–1945: The Arts, Sciences, and Literature* (vol. 2), ed. by Werner Schröder and Herbert A. Strauss, München [et al.]: K. G. Saur, 1983, 1201, also suggests as much. For further information on the actor, see his entry in Kay Weniger, *'Es wird im Leben dir mehr genommen als gegeben...' Lexikon der aus Deutschland und Österreich emigrierten Filmschaffenden 1933 bis 1945: Eine Gesamtübersicht*, Hamburg: Abacus, 2011, 661–663.

148 For a list of the German cast, see <https://www.filmportal.de/film/der-kurier-des-zaren_3647c1ca7c5a42258c3cd1e57ca05608> (accessed 29 August 2023). For a list of the French cast, see <https://www.filmportal.de/film/michel-strogoff-le-courrier-du-tzar_674c7fa584954745843060f8d3fa7ca7> (accessed 29 August 2023).

149 Some sources alternatively suggest that the scenes may have been shot in Siberia, cf. 'The Soldier and the Lady (1937),' in: *AFI Catalog of Feature Films*, online: <https://catalog.afi.com/film/5918-the-soldierandthelady> (accessed 29 August 2023).

150 For the claim that footage was reused, cf. Thomas C. Renzi, *Jules Verne on Film: A Filmography of the Cinematic Adaptations of his Works, 1902 through 1997*, Jefferson, North Carolina: McFarland, 1998, 126.

151 For general information on the phenomenon, see Chris Wahl, *Sprachversionsfilme aus Babelsberg: Die internationale Strategie der Ufa 1929–1939*, München: edition text+kritik, 2009, and the translation Chris Wahl, *Multiple Language Versions Made in Babelsberg: Ufa's International Strategy, 1929–1939*, transl. by Steve Wilder, Amsterdam: Amsterdam University Press, 2016. See also the two dedicated issues of a journal focusing on international film studies: *Cinéma & Cie* 4 (2004), ed. by Nataša Ďurovičová, and *Cinéma & Cie* 6 (2005), ed. by Hans-Michael Bock and Simone Venturini.

particular to a certain period in time, yet one that affected many films and their variant creation. Which leads us back to a more tightly controlled discussion of scope.

F.
CULTURAL CONNOTATIONS

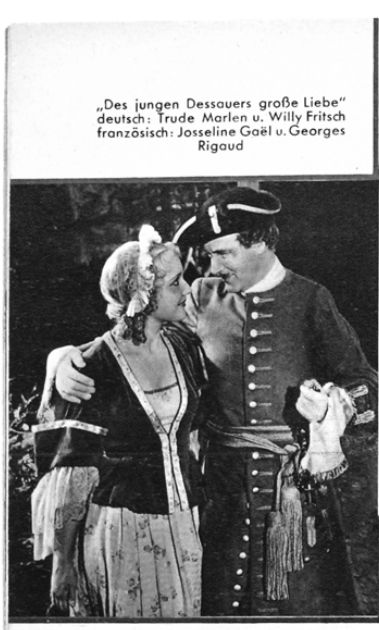
In the late 1920s and early 1930s, when sound film was still a recent development and the 'talkies' were not yet technically sophisticated enough to allow for the dubbing of films into other languages,[152] it was common practice to shoot a film in different languages at the same time, using the same crew and sets and only exchanging those of the cast who were not fluent in the required languages or did not have enough appeal for the targeted foreign market (see **FIG. 44**, where an article from 1934 describes this phenomenon contemporarily). Even as late as 1953, director Otto Preminger used this approach to film *The Moon is Blue* / *Die Jungfrau auf dem Dach* although by that point, dubbing had long since become the cheaper standard.[153] Outside of the Anglo- and Eurocentric sphere, MLVs exist to this day, such as in India where they are one way to address the multi-cultural and multi-lingual landscape.[154]

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152 Although attempts existed in a Franco-German context as early as 1929, cf. Kathrin Engel, *Deutsche Kulturpolitik im besetzten Paris 1940–1944: Film und Theater*, München: Oldenbourg, 2003, 59.

153 Preminger estimated that shooting the film simultaneously in German and English would only increase the cost by 10 to 15 percent, cf. Chris Fujiwara, *The World and Its Double: The Life and Work of Otto Preminger*, New York: Faber & Faber, 2008, 143. He ended up liking only the American version, however, since the German version had apparently – in contrast to the earlier MLVs that were tailored to suit the cultural preferences of their respective audiences – not re-adapted the psychology of the underlying American play enough to work, cf. ibid., 145.

154 See, for example, the *Macbeth* adaptation *Veeram* (2016), directed by Jayaraj, which was shot in Malayalam, Hindi, and English, cf. Poonam Trivedi and Paromita Chakravarti, "Introduction," in: *Shakespeare and Indian Cinemas: 'Local Habitations'*, ed. by Poonam Trivedi and Paromita Chakravarti, London / New York: Routledge, 2019, 1–20, here 5. Even though multilingual films have been made in India throughout the decades, meaning films that were simultaneously shot in several languages, a term such as 'multilinguals' is – similar to MLVs in Europe and Hollywood – used to refer to films made in India in the 1930s specifically as well, cf. the entry Ashish Rajadhyaksha, 'Multilinguals,' in: *Encyclopedia of Indian Cinema*, London: British Film Institute, 1994,



„Des jungen Dessauers große Liebe"
deutsch: Trude Marlen u. Willy Fritsch
französisch: Josseline Gaël u. Georges Rigaud



VERSIONEN

Die Notwendigkeit, fremdsprachige Fassungen für große Filme herzustellen, entspringt der Tatsache, daß seit Erfindung und Ausnutzung des Tonfilms der Film seine eigentliche Internationalität verloren hat. Es war früher möglich, jederzeit den in Deutschland Amerika, Frankreich England usw. produzierten Film durch Titel in der jeweiligen Landessprache in allen Ländern der Welt und vor allen Völkern der Erde vorzuführen. Heute gibt es riesengroße Sprachgebiete, die für den deutschen Film vollkommen verloren sind, wenn der Film sich nicht der Sprache der betreffenden Länder bedient.

Es gibt auf der Erde drei große Sprachgruppen, die die Welt beherrschen: deutsch, englisch und französisch. Will man also einen Film drehen, der in allen zivilisierten Ländern der Erde zur Aufführung kommen soll, dann muß man ihn in diesen drei Sprachen herstellen. Infolge der augenblicklichen politischen Verhältnisse fällt für Deutschland fast das gesamte englischsprechende Sprachgebiet der Welt aus, und so kommt es, daß zur Zeit die deutschen Großfilme nur in deutscher und französischer Sprache gedreht werden.

Bei der Produktion fremdsprachiger Fassungen ist natürlich das Ideal, Schauspieler zu besitzen, die in allen drei Sprachgruppen gleich bekannt sind und die gleichzeitig diese drei Sprachen so beherrschen, daß sie akzentlos ihre Rolle spielen können. Solche Sprachphänomene gibt es leider nur sehr wenig, und es ist interessant festzustellen, daß hier die Frauen an erster Stelle stehen. Lilian Harvey z. B. beherrscht vollkommen akzentlos die deutsche, englische und französische Sprache und spielt in ihren Filmen in allen drei Fassungen die weibliche Hauptrolle. Brigitte Helm finden wir in einer ganzen Reihe von Filmen als Darstellerin der weiblichen Hauptrolle sowohl in der deutschen als in der französischen Fassung, desgleichen Käthe von Nagy, und auch Renate Müller hat einmal in einer englischen Fassung und einmal auch in einer französischen Fassung gespielt. Damit ist aber die Liste dieser Darstellerinnen erschöpft. Von den männlichen Darstellern wäre neben Hans Albers, der in der englischen Fassung von „Bomben auf Monte Carlo" ebenfalls die männliche Hauptrolle spielt, Conrad Veidt zu erwähnen, der in England sehr beliebt ist und häufig als Star in englischen Fassungen auftritt.

Es ist interessant, wie nun die einzelnen Schauspieler, teilweise durch die Mentalität der Länder bedingt, ihre Rollen ganz verschiedenartig auffassen, obwohl die einzelnen Fassungen eines Films von dem gleichen Regisseur in-





„Flüchtlinge"
franz.: Pierre Blanchar u. Käthe v. Nagy
deutsch: Hans Albers u. Käthe v. Nagy



Kollegen zusieht. Das geschieht schon aus dem Gefühl heraus, nicht die individuelle Auffassung der Rolle zu verlieren. Diese individuelle Auffassung von einer einzelnen Rolle, die man bei den verschiedenen Darstellern der verschiedenen Sprachgruppen findet, geht nicht allein auf die Gestaltung sondern auch auf das Aussehen des einzelnen Darstellers über. Die Maske der Schauspieler ist absolut nicht immer die gleiche. Wir haben z. B. den typischen Fall bei Paul Kemp, dem Humoristen in den verschiedenen Kiepura-Filmen, die man hier in Deutschland gesehen hat. Sein

„Gold"
deutsch: Hans Albers u. Lien Deyers
französ.: Pierre Blanchar u. Rosine Deréan



szeniert werden. Zum Vergleich kann man daran denken, wie verschieden z. B. in Deutschland ein großer Regisseur oder Schauspieler die einzelnen Personen in den Werken unserer Klassiker auffaßt.

Selbstverständlich wird stofflich bei den einzelnen Fassungen kaum etwas geändert, da die deutsche Zensur einen Film für das Ausland in einer ausländischen Fassung nur freigibt, wenn diese Fassung mit dem deutschen Film übereinstimmt. Dagegen ist aber sehr häufig die Darstellung der Persönlichkeit der einzelnen handelnden Personen grundverschieden.

Wie schon vorher gesagt, ist der Regisseur in den einzelnen Fassungen immer der gleiche. Er wird nur assistiert von einem Regisseur, der der Sprache des Landes mächtig ist und ev. regieliche Änderungen vornimmt, die für das betreffende Land oder für die betreffende Sprachgruppe eine unbedingte Notwendigkeit sind. Die Fassungen werden in Deutschland stets nacheinander in den einzelnen Szenen aufgenommen. Dabei wird man niemals einen Schauspieler der einen Fassung sehen, wie er bei der Gestaltung der Rolle des fremdsprachigen



„Viktor und Viktoria"
deutsch: Renate Müller u. Adolf Wohlbrück
französ.: Meg Lemonnier u. Adolf Wohlbrück

französischer Kollege ist ein in Frankreich sehr beliebter Schauspieler Lucien Baroux, der ihm im Aussehen und auch in der Darstellung absolut nicht gleicht. Er ist ein typischer französischer Komiker und verschieden von dem Komikertyp Paul Kemps. Sowohl in Frankreich als auch in Deutschland wird aber an den gleichen Stellen und in gleich herzlicher Weise über die Späße und Clownerien jedes einzelnen gelacht.

Bei der Gestaltung dramatischer Rollen haben wir genau dasselbe. Immer wieder ist die Auffassung der Darsteller einer Rolle grundverschieden, aber wenn nachher der Film vor dem Publikum des jeweiligen Landes abläuft, so findet man trotzdem die gleiche Ergriffenheit beim Publikum. Das ist der Fortschritt, den der Tonfilm vor den früheren internationalen Stummfilmen voraus hat: Man kann heute den Kinobesucher in der ganzen Welt packen, indem man den Darsteller nach der Mentalität der Sprachgebiete eine Rolle gestalten läßt, während diese Rolle früher durch die Zwischentitel nur illustriert wurde.

FIG. 44: Article about multi-language film "Versions" from *Filmwelt* 5 (1934), 9–10 (photographer(s) and author could not be identified; image courtesy of the *Theaterwissenschaftliche Sammlung*, University of Cologne).

Of the films that were shot as multiple-language versions in earlier decades in Europe, *Der blaue Engel* / *The Blue Angel* (1930), directed by Josef von Sternberg, is one of the few that has seen a combined home video release.[155] Some editions of the film include both the English and the German version as well as a split-screen comparison of a scene set in a classroom.[156] Unlike the comprehensive side by side comparison of the domestic and export versions of Murnau's *Faust* (1926) on the 2014 Eureka release, however, which introduces each visual comparison with a text assessing the differences that viewers are about to see (cf. **FIG. 45**), the scene comparison of *Der blaue Engel* / *The Blue Angel* (1930) stands so isolated that it has been described as a "gimmick, since any kind of analysis, explanation, or contextualization are missing."[157] This despite

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15 [revised edition published by Ashish Rajadhyaksha and Paul Willemen, *Encyclopedia of Indian Cinema*, Chicago: Fitzroy Dearborn, 1999; that edition republished by London / New York: Routledge, 2012]. On the need for lingual diversity in Indian cinema, aside from the matter of films being shot in multiple languages at the same time, see also Mara Matta, "Multilingualism and Indigenous Cinema in Northeast India: The Case of Kokborok Language Films," in: *The Multilingual Screen: New Reflections on Cinema and Linguistic Difference*, ed. by Tijana Mamula and Lisa Patti, New York [et al.]: Bloomsbury Academic, 2016, 335–350.

155 Cf. Wahl 2008, 77. The German and English versions are included in the Eureka (Masters of Cinema; 49) release, 2013, <https://eurekavideo.co.uk/movie/the-blue-angel/> (accessed 29 August 2023), the Kino DVD release, 2001, <https://kinolorber.com/product/the-blue-angel-dvd> (accessed 30 August 2023), the Kino Lorber Blu-ray release, 2013 (not their single-disc Blu-ray release from 2012 which only contained the German version), <https://kinolorber.com/product/the-blue-angel-deluxe-blu-ray-blu-ray> (accessed 30 August 2023), and in the release by the Friedrich-Wilhelm-Murnau-Stiftung through Universum Film, 2001/2012, <https://www.murnau-stiftung.de/movie/78> (accessed 29 August 2023). Another example for this type of release would be the Criterion release of *Die Dreigroschenoper* (1931): In addition to the German version, it includes the French version *L'opera de quat'sous*, starring Albert Prejean and Florelle, and the release furthermore includes a scholarly presentation on the differences between the versions, cf. *The Threepenny Opera* ('Die Dreigroschenoper', 1931), dir. by G. W. Pabst, Criterion (Collection; 405), <https://www.criterion.com/films/834-the-threepenny-opera> (accessed 29 August 2023).

156 This feature is included in the 2001/2012 Universum Film release and the Kino Lorber Blu-ray release from 2013 (see previous fn.).

157 Chris Wahl, "Den Unterschied macht die Forschung: ein Doppelplädoyer für das kritische Edieren von Ufa-Sprachversions- und NS-Vorbehaltsfilmen," in: *Kritische Film- und Literaturedition: Perspektiven einer transdisziplinären Editionswissenschaft* (editio / Beihefte; vol. 51), ed. by Ursula von Keitz, Wolfgang Lukas and Rüdiger Nutt-Kofoth, Berlin / Boston: De Gruyter, 2022, 293–306, here 297, online: <https://doi.org/10.1515/9783110684605-015>, original: "Das ist im Prinzip eine sehr schöne

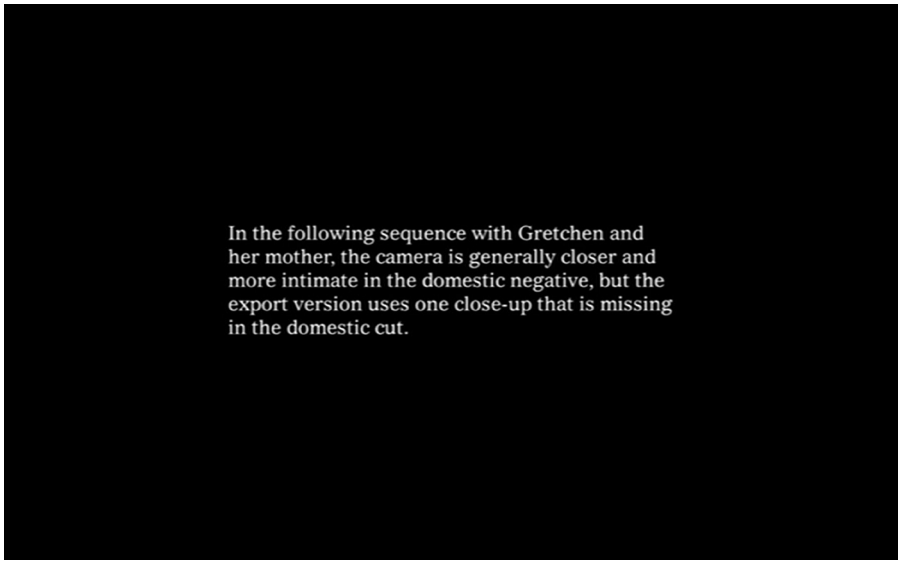


FIG. 45: Textual annotation / introduction of a scene in the comparison of the domestic and export versions of *Faust – eine deutsche Volkssage* (1926), ed. by Bradley Richards, prod. by Nick Wrigley, written and dir. by R. Dixon Smith; screen capture, Blu-ray: Eureka (Masters of Cinema; 78), 2014, time stamp 0:17:22 (bonus feature).

the fact that the versioning of this particular film is arguably less complex to comprehend and denote than that of many other MLVs. One variance can be found in the editing and shot selection and therefore the rhythm and feeling of scenes, influenced by filming a scene multiple times or with multiple cameras and then assembling it in the editing room in different ways. This is neither specific to one genre of film nor to one mode of production.

A variance of MLVs is characteristic when it resembles the variance we find in medieval picture programmes because theirs is a variance of *manual reproduction*. We may have versions of medieval works (a long and a short version, for example) and we may have witnesses of these versions – and in some cases, each witness will be so unique and there will be so few witnesses of a work to begin with that grouping them into versions will make little sense. At other times, we will have versions of

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Möglichkeit, mit den Sprachversionsfilmen umzugehen, bleibt in diesem Fall allerdings Spielerei, da jegliche Art von Analyse, Erklärung oder Einordnung unterlassen wurde."

a work that demand so much attention that an edition would only be attempted for that single version rather than the work (or *Werkkomplex*) as a whole – think of the *Elsässische Legenda aurea* mentioned in **CHAPTER I** and its manuscript witnesses, four of which were produced in the workshop of Diebold Lauber.[158] Length and language are two universal criteria, then, that would seem to divide a work into versions. With films, witnesses are still important, as evidenced by the archival histories touched on earlier – and there are so many we have not touched on at all, be it *Napoléon* (1927), directed by Abel Gance, or *All Quiet on the Western Front* (1930), directed by Lewis Milestone,[159] the latter of which is also particularly relevant for the issue of language adaptation and the acceptance or rather rejection of dubbing.[160] But beyond the archival, the fragmented and destroyed, the edited and lost, the means of mechanical reproduction generally de-emphasize singular witnesses in film transmission. Witnesses, versions – does it matter? Perhaps it does not, so long as we do not conflate the two. It seems clear to me that with films, our attention naturally shifts towards *versions*, and MLVs are particularly representative of that since "the often quite complicated background of their parallel existence virtually calls for a *critical* edition."[161] A critical

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158 Once more, I want to refer to the *Diebold Lauber digital* portal by the University of Leipzig and here more specifically to its index of manuscripts, <http://wirote.informatik.uni-leipzig.de/mediavistik/werke/> (accessed 30 August 2023), as well as to the information on the *Elsässische Legenda aurea* provided by the *Repertorium 'Geschichtsquellen des deutschen Mittelalters'*, Bayerische Akademie der Wissenschaften, <https://www.geschichtsquellen.de/werk/5358> (last updated 10 September 2019; accessed 30 August 2023).

159 On *Napoléon* and its complicated transmission and restoration history, see Paul Cuff, *A Revolution for the Screen: Abel Gance's Napoléon*, Amsterdam: Amsterdam University Press, 2015, 25–29. On *All Quiet on the Western Front*, its versioning, censoring, and banning, see Andrew Kelly, "All Quiet on the Western Front: 'Brutal Cutting, Stupid Censors and Bigoted Politicos' (1930–1984)," in: *Historical Journal of Film, Radio and Television* 9/2 (1989), 135–150, online: <https://doi.org/10.1080/01439688900260121>. See also 'All Quiet on the Western Front,' in: *AFI Catalog of Feature Films*, online: <https://catalog.afi.com/film/2558-all-quietonthewesternfront> (accessed 30 August 2023).

160 Cf. Michael Wedel, "Universal, Germany, and All Quiet on the Western Front: A Case Study in Crisis Historiography," in: *NECSUS: European Journal of Media Studies* 1/1 (2012), 126–147, here esp. 136–142, online: <https://doi.org/10.25969/mediarep/15044>.

161 Wahl 2008, 77.

edition of what? The assignation of elements and relationships, of *descriptions*, cannot be enough.

Allow me to explain this in more detail by way of one example (although it will be difficult to convey this in writing). Take *Die Drei von der Tankstelle* / *Le chemin du paradis* ('The Three from the Filling Station' / 'The Road to Paradise', 1930), directed by Wilhelm Thiele and Max De Vaucorbeil respectively. The female lead actress Lilian Harvey played her role in both the German and the French version while the roles of the three male protagonists were recast. There is a musical number called *Hallo, du süße Frau, fahr' nicht allein* ('Hello, sweet lady, don't drive all on your own') that takes place at the petrol station and involves Lilian Harvey's character 'Lilian' and, in the German version, Oskar Karlweis' character Kurt. In the French version, his character has been exchanged for another: Rather than his counterpart Guy, played by Jacques Maury, the counterpart of Willy Fritsch's role 'Willy' – played by Henri Garat – joins her in song (see **FIGS. 46** and **47**). This is a significant change, since Willy is the main love interest whereas Kurt is not, subverting the entire subtext of the scene (as well as its placement within the story as a plot device, affecting how it ends, and what follows from it):

In the German version, Lilian's character meets 'the three friends' one after another, over the course of a day, as she stops at their petrol station. First, she meets Hans, played by Heinz Rühmann as the nerdiest of the men.[162] They share an exchange half-sung to the melody of *Hallo, du süße Frau*, foreshadowing it musically, before transitioning into regular dialogue. Lilian buys two litres of oil and leaves. Hans goes home and Kurt takes over. The second encounter that follows involves the playful and comedic musical number where Oskar Karlweis acts the hapless suitor and Lilian Harvey dances with him and around him, exposing her legs as she does. There is no dialogue to lead into the scene, rather a montage of Kurt serving different customers until Lilian comes along with a song (that begins with the honking of the horn of her car).

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162 His French counterpart Jean, played by René Lefèvre, is equally demarcated by wearing glasses.



FIG. 46: Every second frame of a brief sequence from *Hallo, du süße Frau* in *Die Drei von der Tankstelle* (1930), starring Lilian Harvey and Oskar Karlweis; screen capture, DVD: Friedrich-Wilhelm-Murnau-Stiftung / Universum Film [Collection *Die große Heinz Rühmann-Box*], 2018, 25 fps, time stamp 0:25:15–0:25:16.



FIG. 47: Every second frame of a brief sequence (corresponding to the exact same part, musically, in **FIG. 46**) from *Hallo, du süße Frau* in *Le chemin du paradis* (1930), starring Lilian Harvey and Henri Garat; screen capture, DVD: René Chateau Vidéo, 2016, 25 fps, time stamp 0:30:34–0:30:35 [* aspect ratio unchanged, the image appears cropped at the bottom in this release].

Thematically, both the lyrics and the choreography address the emancipation of women driving cars on their own and rejecting the men who wish to join them on their ride. This is performed with a wink – the two characters even share a brief kiss and then continue with faux shock. The scene ends with Lilian driving off while the song is still playing, waving as she disappears. Kurt realizes with some delay that Lilian has forgotten the cap of her tank and is losing petrol. (She will have to be back in the evening, this time to encounter Willy, her love interest for the remainder of the film.) Kurt, meanwhile, finishes the song with a last verse, lovingly holding the forgotten cap and singing to himself: "If in spring you don't drive together / You'll get lonely in the most beautiful car / Hello, sweet lady / Don't drive all on your own / Why not invite me / I know the way to paradise."[163] As the scene fades to black, he sits on his own, of course, all alone. The irony of it adds the crucial finishing touch.

In the French version, Lilian does meet the three friends as well but not in the same order. Guy / Kurt takes the place of Jean / Hans and services her first, talking to her in a notably different manner and framing and without the foreshadowing of the later song involved. It is at the end of this brief scene that she drives off while losing petrol and Guy notices the forgotten cap which he picks up. There is no further punchline (and no distraction from song and dance to explain the mishap either). He goes home and Jean takes over. Soon enough, Lilian arrives again. This scene plays out similarly to the first encounter in the German version, with the melody of *Hallo, du süße Frau* now being heard in the background. Lilian buys two litres of oil. One wonders how she could not have noticed the loss of petrol. As she drives off, there is no trail of petrol either, although she should still be driving without the cap. Finally, after some other scenes, she stops at the station in the evening and encounters Willy. No song has happened yet. On the surface, this plays similarly to her respective encounter with Willy in the German version,

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163 The 'you' of the first two lines is a generic you. Original German lyrics: "Fährt man nicht im Lenz gemeinsam / Wird's im schönsten Auto einsam / Hallo, du süße Frau / Fahr' nicht allein / Lad' mich doch ein / Ich kenn' den Weg ins Paradies genau."

except that she remarks on her loss of petrol there[164] rather than asking for 30 litres of petrol as she does in French. It is only when he goes to fill her tank that the missing cap catches his eye. He gets a new one, they hold a conversation. At the end of it, when he asks for her name and telephone number, Lilian huffs and gets in her car. In the German version, he says *bitte* ('please') a few times, and she seems amused. As he is pleading and she is driving away with a smile and a wave, she tells him her name and number which he writes down in a notebook, overjoyed. It might be fair to say that it did not take her much convincing. In the background, *Hallo, du süße Frau* has started playing again and Willy, in German, sings the last line: "I know the way to paradise." (And here we might understand why the French version is called *Le chemin du paradis* which is the title of the song in French – evidently focused more on the romance than 'The Three Friends from the Filling Station'.)

But wait – where is the song in the French version? Willy and Lilian have talked, he has asked for her number and name, she has huffed and gotten into her car. In the French version, this is when Willy and Lilian (rather than Kurt and Lilian) launch into the song. No montage of customers as the lead-in. A different time of day (since it is evening, it is much darker). A different outfit (Lilian is dressed in a longer, more modest dress). A different connotation (romantic rather than comedic). What are we to take from this? I am not going to speculate on the way in which this might reflect certain societal attitudes and cultural norms, socially liberal or conservative, although it seems clear that one could easily make such an argument. Even on the surface, the ending of the scene changes the point of the song. While Kurt in the German version merely dreams of paradise, left to his own devices as Lilian asserts her independence, Willy is rewarded for his prolonged perseverance in the French version as Lilian relents, not after a short scene of farewell but after an entire song of rejection. Due to the light-hearted performances in either version, it is difficult to ascertain whether the implications of

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164 "There must be something wrong with my car. I just filled up this afternoon and now I don't have a drop of petrol left." (Original German: "An meinem Auto muss irgendetwas nicht in Ordnung sein. Heute Nachmittag hab' ich erst getankt und jetzt habe ich keinen Tropfen Benzin mehr.")

this are ultimately negligible or not. It does have further-reaching consequences, however, not least of all for the dynamic among the three friends. In both versions, Willy's goodbye to Lilian transitions into a scene of Hans / Jean and Kurt / Guy playing chess. An instrumental version of *Hallo, du süße Frau* continues to sound in the background. Kurt / Guy starts to whistle along to the melody. Hans / Jean asks him what he is whistling and Kurt / Guy replies: "Oh, nothing." Then Hans / Jean starts humming along to the melody. Same question and answer in reverse. So far, so similar. Except that the song never played during Lilian's encounter with Guy in the French version, not even as part of the score. What is he reminiscing about? This is a subtle difference that viewers of the French version are unlikely to notice. One could, after all, understand from the context that both men are thinking of Lilian as it has become a signature melody at that point. Nonetheless, a sense remains that there is another layer of meaning to the German version here that is missing from the French version. There are many other differences between the two versions, right down to the hat that a 'difficult' customer wears (cf. **FIG. 48**), and it would be possible to explore each in excruciating depth and detail. Perhaps that is not necessary, even in a (semi-)scholarly edition of such a work (complex). Editorial choices will always dictate a focus of attention, especially as we move from layers of *description* to layers of *interpretation*.

Chris Wahl has identified four key areas of differentiation between versions of MLVs on the basis of the film *Ich bei Tag und Du bei Nacht / À moi le jour, à toi la nuit / Early to Bed* (1932), directed by Ludwig Berger and Claude Heymann: the language-image relationship, the props, the mood or humour, and the national context.[165] Each of these could be expanded, but they do indicate special zones of interest that rely on a human interpreter more so than the mere observation of deviation. I have chosen to highlight this type of variance among a plethora of variances in film transmission because it returns us to a very central, general issue. Effectively, it brings to mind Roland Barthes' semiological

165 Cf. Wahl 2022, 297f.



FIG. 48: Comparison of national costuming choices, above *Die Drei von der Tankstelle* (1930), where the customer wears a hat with a gamsbart, below *Le chemin du paradis* (1930), where the customer wears a bowler. Other differences include the stiff high collar in the German version where the man also wears pince-nez glasses attached to a ribbon, as well as the demeanour of the characters – the customer in the German version loses his hat twice in the course of the scene; screen capture above, DVD: Friedrich-Wilhelm-Murnau-Stiftung / Universum Film, 2018, time stamp 0:14:32, and below, DVD: René Chateau Vidéo, 2016, time stamp 0:14:39.

concept of *dénotation* and *connotation*,[166] which parallels Erwin Panofsky's distinction between a pre-iconographic description of an image (the *dénotation* of its 'contents') and an iconographic or even iconological analysis of it (the *connotation* of its wider cultural implications).[167] In terms of editorial theory, Hans Zeller's distinction between *Befund* ('record' / 'evidence' / 'finding') and *Deutung* ('interpretation' / 'explanation') adds yet another corresponding concept.[168] Søren Kjørup, in his book on the humanities, notes the similarity between Panofsky's concept and the pair of *denotation* and *connotation*, referring to Umberto Eco's introduction to semiotics; in fact, he relates it to Panofsky's schema as if those layers of analysis were identical.[169] An in-depth discussion of these parallels has yet to take place, to the best of my knowledge, and it might suffice here to remark on a superficial familiarity. Levels of signification are difficult to distinguish and there is a question – across all editorial issues we have discussed thus far – about the feasibility of any given editorial project. How thorough is thorough enough? Are we going to miss the forest for the trees, marking up figurative minutiae versus modelling that which actually matters? Who is to decide? (The editor or editorial team, of course.) Are scholarly editions that do nothing besides 'representing' evidence adequate *Auseinandersetzungen* ('engagements') with the material? This is different from asking whether they are adequate *resources* (for one purpose or another). The answer might depend on the object of study and edition.

With film, layers of connotation go beyond the cultural contexts that may be very specific to the versioning of MLVs. Consider *La belle*

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166 See Roland Barthes, "Éléments de Sémiologie," in: *Communications* 4 (1964), 91–135, here 130–132 (section IV).

167 Daniel Chandler is among those who make a connection between the two concepts as well, cf. Daniel Chandler, *Semiotics: The Basics*, London / New York: Routledge, 2002, 140.

168 Cf. Zeller 1971 and Dedner 2008.

169 Cf. Kjørup 2001, 230f. He does the same, even more directly, in Søren Kjørup, *Semiotik* (UTB für Wissenschaft; vol. 3039), Paderborn: Fink, 2009, 61–63, outright stating: "Translated into semiotic terms, the pre-iconographic layer is clearly concerned with denotation and the iconographic layer with connotation." (Ibid., 63, original: "In semiotische Begriffe übersetzt geht es bei der vor-ikonographischen Ebene klar um Denotation, bei der ikonographischen um Konnotation.")

équipe (1936), directed by Julien Duvivier. The original ending of the film was deemed too pessimistic by the producers and he had to reshoot a more optimistic one, which obviously changed the tone quite significantly; legal disputes prevented a release of the original ending for many decades afterwards.[170] Or how about the film noir *Night and the City* (1950), directed by Jules Dassin? Its beginning and ending were significantly altered for its British release, giving it "a more romantic spin."[171] A new soundtrack was also composed for the British version and an essay by Christopher Husted that is included in the bonus features of the Criterion release of the film illustrates how much of a difference in ambience and suspense the differing soundtrack makes, with one chase sequence in the British version being left entirely unscored as opposed to the string accompaniment in the original American version; to name but one obvious difference in setting the scene.[172] Is it possible to describe this difference?[173] One editorial choice must always involve the choices given to readers and viewers, so they may compare, analyse, and understand for themselves. Another choice must be the willingness of the editor(s) to share the knowledge they have gathered in the process

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170 Cf. Olivier Père, "La Belle Equipe de Julien Duvivier," in: *ARTE Cinéma* (29 March 2016), online: <https://www.arte.tv/sites/olivierpere/2016/03/29/la-belle-equipe-de-julien-duvivier/> (accessed 1 September 2023).

171 Mike D'Angelo, "Criterion Offers Two Distinct Versions of One Terrific Noir: Night and the City," review, in: *AV Club* (5 August 2015), online: <https://film.avclub.com/criterion-offers-two-distinct-versions-of-one-terrific-1798184543> (accessed 30 August 2023).

172 For information on how the scores compare, see Christopher Martin, "Night and the City: Scores by Benjamin Frankel and Franz Waxman," review, in: *Journal of British Cinema and Television* 4/1 (2007), 203–205. For information on the Criterion release and its special features, see *Night and the City* (1950), dir. by Jules Dassin, Criterion (Collection; 274), <https://www.criterion.com/films/933-night-and-the-city> (accessed 30 August 2023).

173 It is, at the very least, already done in closed captioning for the hearing-impaired, where musical cues are often denoted with the impression they are supposed to leave on the viewer; cf. John Kelly, "With Closed Captioning, Music Can Help Tell a Story," in: *The Washington Post* (24 July 2013), online: <https://www.washingtonpost.com/local/with-closed-captioning-music-can-help-tell-a-story/2013/07/24/18a172e2-f3d2-11e2-aa2e-4088616498b4_story.html> (accessed 30 August 2023). See also Jessica Green, "Understanding the Score: Film Music Communicating to and Influencing the Audience," in: *The Journal of Aesthetic Education* 44/4 (2010), 81–94.

of creating an edition, screening material, engaging with it in a way few others will ever do.

Reconstruction – often a necessity, always a principle involved (whether in the construction of a lost ideal or the assemblage of surviving evidence) – can chafe against layers of connotation and this should be a conscious part of the process. If we stay with the matter of scoring films with music, then we should acknowledge that it is especially relevant for silent films. In most cases, there is no extant original soundtrack or even score – *Metropolis* (1927), as scored by Gottfried Huppertz, is a notable exception and, indeed, his annotated sheet music played a crucial role in the film's reconstruction history.[174] Since the music that accompanied silent films was performed live and is thus generally lost if it was improvised or if the written scores were not archived,[175] new releases will often feature a new soundtrack and sometimes even several between which the viewer can choose.[176] That this can result in divisive offerings could be seen in the case of *Varieté* (1925) which was released in a restored version by the Friedrich-Wilhelm-Murnau-Stiftung in 2015 and supplemented with a soundtrack by the band *The Tiger Lillies*.[177] The choice proved extremely controversial.[178] Such an ahistorical approach would, naturally, be out of place in a scholarly edition, but it does raise the issue of a value of (re-)experience, when a *reimagination* of the music and *how it might have been* performed is the closest approximation,

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174 Cf. Speidel 2006, 13. For a sample of the sheet music, see the booklet of the *Metropolis* 2006 study edition, 26f.

175 See, for more on the topic in general, Martin Miller Marks, *Music and the Silent Film: Contexts and Case Studies, 1895–1924*, Oxford [et al.]: Oxford University Press, 1997.

176 See, for example, the release of *Wings* (1927), dir. by William A. Wellman, Eureka (Masters of Cinema; 77), <https://eurekavideo.co.uk/movie/wings/> (accessed 30 August 2023), or the release of *The Passion of Joan of Arc* ('La Passion de Jeanne d'Arc', 1928), dir. by Carl Theodor Dreyer, Criterion (Collection; 62), <https://www.criterion.com/films/228-the-passion-of-joan-of-arc> (accessed 30 August 2023).

177 See <https://www.murnau-stiftung.de/stiftung/projekte/projekt-variete> (accessed 28 August 2023).

178 The negative reactions that this soundtrack caused can be traced among blogs, reviews, and forum threads by silent film aficionados but might be most succinctly described by *Filmdienst* calling its reception "controversial" (cf. <https://www.filmdienst.de/film/details/28497/variete-1925> (accessed 28 August 2023)).

seeing as no performance would have been identical to the other in any case.[179]

Yet another aspect of an interpretive type of variance can be seen in the film *Whiplash* (2014). Not only is it a prime example for what we would call a *Langfassung* ('long version') and a *Kurzfassung* ('short version') of a work since the feature film is the long version (106 minutes) of the short film (18 minutes) also titled *Whiplash* (2013); both directed and written by Damien Chazelle, both starring J. K. Simmons as the abusive teacher Terence Fletcher, albeit with different actors in the protagonist role.[180] The set design, lighting, and colour grading are major differences that viewers have remarked upon, aside from length, crediting them with hugely influencing the tone, mood, and impression of the film (see **FIG. 49**), thereby changing viewers' perception of the characters and story.[181] A scholarly edition should likely comment on this, in addition to providing a synoptic comparison. As demonstrated in the case of *Faust* (1926), editing plays a decisive role as well (and we may ascribe the heightened need for assessments of effect to the heightened importance of the *experience* of a cultural work when it is expressed in a time-based medium, to be clear). Among the many examples we could discuss here, I want to briefly mention the convoluted histories of films from Hong Kong, such as 喋血街頭 ('Bullet in the Head', 1990), directed by John Woo. Without in-depth knowledge of the transmission and extant witnesses, and without commercial releases of all versions known to exist available, it is impossible to re-trace the different ways in which this film would have been perceived in different markets at the time (where it was subject to different levels of censorship), and it would require a scholarly

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179 See, for more nuanced discussion of this topic, K. J. Donnelly and Ann-Kristin Wallengren (Eds.), *Today's Sounds for Yesterday's Films: Making Music for Silent Cinema*, Basingstoke: Palgrave Macmillan, 2016.

180 See 'Whiplash,' in: *AFI Catalog of Feature Films*, online: <https://catalog.afi.com/film/70240-whiplash> (accessed 1 September 2023).

181 Such audience reactions can be found, for example, under videos comparing both versions, cf. the video by the channel Movie LUTs, "Why do Short Films look like that?" 23 March 2023, <https://www.youtube.com/watch?v=a5uiGFkjaDQ> (accessed 1 September 2023), or the comparison by the channel Cozy Weather, "Whiplash Movie and Short Comparison (Short Audio Only)," 5 July 2015, <https://www.youtube.com/watch?v=AiSYjRJeLTk> (accessed 1 September 2023).



FIG. 49: Visual comparison of the short film (2013) and feature film (2014) versions of *Whiplash*, dir. by Damien Chazelle; screen capture, Blu-ray: Sony Home Entertainment, 2020, above time stamp 0:13:37 (bonus feature, original short film), below time stamp 0:27:09 (feature film).

edition to 'make sense' of variant cuts that deliver significantly divergent viewing experiences.[182] Since John Woo's Ur-version is considered lost, "no 'director's cut' is now in existence nor, sadly, will there ever be one."[183]

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182 Cf. Tony Williams, *John Woo's Bullet in the Head*, Hong Kong: Hong Kong University Press, 2009, 109–111. See also comparisons of cuts such as <https://www.movie-censorship.com/report.php?ID=761844> (accessed 1 September 2023), <https://www.schnittberichte.com/schnittbericht.php?ID=896487> (accessed 1 September 2023), and <https://www.schnittberichte.com/schnittbericht.php?ID=18649> (accessed 1 September 2023).

183 Williams 2009, 109. Interestingly, Williams compares this to the situation of Fritz Lang's *Metropolis* (1927), where, as noted before, the 'original' version was recovered in 2008 and published in restored form in 2010.

Director's cut versions of films are, generally speaking, plentiful[184] and while scholarly editions do not have to adhere to an authorship paradigm that prioritizes intention as the guiding principle of (re-)creation, the knowledge of intention rather than the inference of intention that we may find with editions of older works does add another dimension to editorial criteria of presentation and analysis. In the case of a film like *Queen Kelly* (1928), directed by Erich von Stroheim, we would have to contend with conflicting intentions of multiple involved parties: During the troubled production history, the director clashed with silent film star Gloria Swanson and was eventually fired before the film could be completed.[185] Swanson, in an attempt to recoup some of her financial investment, added an alternative ending to the film that saw a release in Europe in 1932.[186] After that, it was not until 1967 that Swanson's efforts to relocate the film were successful and it was shown in the United States.[187] In an introduction for a subsequent TV broadcast, she remarked: "In France, they ran it without my ending because I think von Stroheim preferred that and he was then alive. […] There are going to be quite many versions I imagine, depending on how many hands have been on it."[188]

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184 One of the more famous examples of a director's cut of a film is the 1992 cut of *Blade Runner* (1982); see Varun Begley, "'Blade Runner' and the Postmodern: A Reconsideration," in: *Literature/Film Quarterly* 32/3 (2004), 186–192.

185 Cf. Julie Buck, 'Gloria Swanson,' in: *Women Film Pioneers Project*, ed. by Jane Gaines, Radha Vatsal and Monica Dall'Asta, New York: Columbia University Libraries, 2013, online: <https://doi.org/10.7916/d8-q0za-ts47>.

186 Cf. Michael Koller, "Erich von Stroheim's Damned Queen: Queen Kelly," in: *Senses of Cinema* 78 (2007), online: <https://www.sensesofcinema.com/2007/cteq/queen-kelly/> (accessed 30 August 2023). In the United States, the film remained unseen until footage from it was used in Billy Wilder's film *Sunset Blvd.* (1950) in which Gloria Swanson plays a former silent star and Erich von Stroheim plays her butler who also used to be her director, cf. Ed Sikov, *On Sunset Boulevard: The Life and Times of Billy Wilder*, Jackson: University Press of Mississippi, 2017, 295f. For information on the casting, see ibid., 286f.

187 Cf. Tricia Welsch, *Gloria Swanson: Ready for her Close-Up*, Jackson: University Press of Mississippi, 2013, 366.

188 Transcribed from a video recording, "'Queen Kelly' presented in person by Gloria Swanson Part 2," 25 March 2010, <https://www.youtube.com/watch?v=t1N0c5hJEjA> (accessed 1 September 2023), time stamp 0:00:36–0:01:00. The exact air date and source is not clear. Tricia Welsch states that, after 1967, "Swanson, clutching her signature carnation, recorded a commentary to accompany Kelly's debut on public TV" (Welsch 2013,

The dispute between director and lead actress highlights, again, that films, unlike most literary outputs, are collective undertakings. It also highlights how authorial objectives shape efforts of restoration and reconstruction. For the release of a collection of his films by Criterion, director Wong Kar Wai discussed some of the changes that were made and noted, in reference to an earlier overhaul of his film 東邪西毒 ('Ashes of Time', 1994) that he had overseen in 2008, released as *Ashes of Time Redux*:

> As the saying goes: 'No man ever steps in the same river twice, for it's not the same river and he's not the same man.' Since the beginning of this process, these words have reminded me to treat these restorations as an opportunity to present new works, from a different vantage point in my career. Having arrived at the end of this process, these words still hold true. I invite the audience to join me in starting afresh, as these are not the same films, and we are no longer the same audience.[189]

A director changing their work to the point of controversy is not exactly uncommon. The most famous example for this might be the original trilogy of *Star Wars* (1977–1983) that George Lucas substantially altered for each new home video release.[190] This includes the manipulation of

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366). One would assume that this recording might be that commentary. The full relevant quote (time stamp 0:00:00–0:01:00) reads: "And actually, since *The Trespasser*, I have tried to finish *Queen Kelly* no less than four times and so finally, I put in a little tag – what you're going to see is an ending that I put on it because I wanted to release it to some of the theatres that yet didn't have sound equipment and let some people see it. And now of course it's in the archives, it's in all the museums now around the world, and many people see it but not with the version that you will see. In France, they ran it without my ending because I think von Stroheim preferred that and he was then alive. And in England – if you please! – they have found some of the cut-out scenes in Africa which were the censored scenes and they've put that on the end of it. So there are going to be quite many versions I imagine, depending on how many hands have been on it."

189 Wong Kar Wai, "World of Wong Kar Wai: Director's Note," blog post, in: *The Criterion Collection* (23 March 2021), online: <https://www.criterion.com/current/posts/7325-world-of-wong-kar-wai-director-s-note> (accessed 30 August 2023).

190 See John C. Lyden, "Whose Film is it, Anyway? Canonicity and Authority in 'Star Wars' Fandom," in: *Journal of the American Academy of Religion* 80/3 (2012), 775–786. For an interesting comparison of editorial desiderata, see also Timo Tekoniemi, "Editorial In(ter)ventions: Comparing the Editorial Processes of the Hebrew Bible and the

elements visible within a frame and their spatial relationship, similar to the type of transmission variance we would describe with medieval picture programmes. Before we can join the conclusions of the last two chapters, one more note of interest: Where there is change, there is also regret. Steven Spielberg has said the following about the changes he made to his film *E.T. the Extra-Terrestrial* (1982) for its 20th anniversary release:

> I should have never messed with the archives of my own work, and I don't recommend anyone do that. All our movies are a kind of a signpost of where we were when we made them, what the world was like and what the world was receiving when we got those stories out there. So I really regret having that out there.[191]

A scholarly edition would have to document this background information and what it might say about the alterations that were made (as well as what those alterations say about their own time, circumstances of creation, and effect on the viewer, in and of themselves).

Let us recount: A scholarly edition must regard all witnesses of a work (or otherwise delineated subject of edition). In cases of media that are transmitted in mechanically reproduced form, a scholarly edition must regard at least one witness of each version of a work (or otherwise delineated subject of edition). Whether variants are dependent upon materially distinct witnesses or otherwise distinct versions or both is, therefore, subject to change. We might call this the *primary evidence*. Furthermore, a scholarly edition must regard all other information available on the genesis, transmission, and reception of a work (or otherwise delineated subject of edition), especially in cases of fragmentary survival that necessitate degrees of reconstruction. We

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Star Wars Saga," in: *Journal of Religion & Film* 22/1 (2018), article 37, [1–30], online: <https://digitalcommons.unomaha.edu/jrf/vol22/iss1/37> (accessed 30 August 2023).

191 Zack Sharf, "Steven Spielberg Regrets Editing Guns Out of 'E.T.,' Says 'No Film Should Be Revised' for Today's Standards: 'That Was a Mistake'," in: *Variety* (25 April 2023), online: <https://variety.com/2023/film/news/steven-spielberg-regrets-editing-guns-et-censorship-1235594163/> (accessed 1 September 2023).

might call this the *circumstantial evidence*. Although scholarly editions must take both primary and circumstantial evidence into account, their representative task lies with all that *should* be conveyed rather than all that *could* be conveyed in order to best allow for scholarly engagement and comprehension, according to editorial choices.

Description and interpretation, *Befund* and *Deutung*, are not to be conflated even though they always interact. Recalling the beginning of the schema developed in the last chapter, it is clear that those levels of description cannot suffice as 'the record', just as a scholarly edition of texts will rarely restrict itself to an *apparatus criticus*. Other levels of observation must also feature. If we substitute films for manuscripts, we might, for example, look at a frame instead of a page, and we might look at a sequence of frames and trace spatial relationships of identified subjects and objects across them. We might also, however, – and this is where we enter other levels of observation – consider a scene, not only in its placement within the work order that we have already accounted for in terms of the description of the witness (or version) in its ordering of content and meaning, but rather in its (narrative) function, in the way in which a divergence causes a ripple effect throughout the work (or otherwise delineated subject of edition) and influences readings (viewings, experiences, understandings). We should also consider the *means of effect*. With films, this would include categories we have broadly alluded to, the sound design, the use of colour, et cetera. This could easily be applied to picture works as well, minus any time-based aspect of technique, craft, and expression. Finally, in the most overtly iconological level of observation, we might draw on our knowledge of the contexts in which a work (or otherwise delineated subject of edition) is embedded. Interpretations are not merely subjective conclusions. They are a consequence of and a platform for comparison, and therefore within the domain of scholarly editing. I have drafted some layers to indicate areas of focus (see **FIG. 50**), albeit ones that cannot be entirely distinguished in this way.

Generally, when thinking about scholarly editions beyond text, a film by King Hu comes to my mind, 空山靈雨 ('Raining in the Mountain', 1979). In this *wǔxiá* drama, set during the Ming Dynasty, thieves and other corrupt individuals all vie for a valuable scroll, held by a Buddhist

OBJECT OF INTERPRETATION	EQUIPMENT FOR INTERPRETATION
I – *Semantic divisions* within the work, e.g. a scene	Knowledge of *narrative*, storytelling, references, the work
II – *Means of effect* across a work, e.g. sound, costume, colour	Knowledge of *craft*, technique, aesthetics, style, psychology, theory
III – *The work* as such and its relation to contexts	Knowledge of *history*, culture, art, society, themes, concepts

FIG. 50: Beginning of a schema for the recording of interpretation layers within the framework of a scholarly edition beyond text.

monastery. After much backstabbing, fighting, and eventually murder, the film ends with an assembly. To the shock of the attendees (in particular those who had been party to treachery), the Abbot reveals the scroll only to burn it in front of everyone. He then reaches for another case containing a scroll and says: "The Mahayana Sutra's true value is in its meaning. It should be available to all. I've made scores of copies."[192] And with that, hands it over. One could take this as an endorsement of textual reproducibility. It seems to me, however, that the point is quite another, one worth restating: Technical details should never distract us from the bigger picture. That bigger picture, scholarly or otherwise, asks us to share in our knowledge. Without a grasp on all of culture, what are we to study?

192 Taken from the English subtitles on the Blu-ray release *Raining in the Mountain [Kong shan ling yu]* (1979), dir. by King Hu, Eureka (Masters of Cinema; 215), 2020, time stamp 1:59:27–1:59:36. See <https://eurekavideo.co.uk/movie/raining-in-the-mountain-kong-shan-ling-yu/> (accessed 2 September 2023).

VI superstructures

Here, our discussion returns to the core inquiry: Why do we make scholarly editions and how can we evolve an editorial theory that encompasses use cases, such as the ones detailed throughout, which exhibit a transmission variance that goes beyond the textual variance that textual criticism has centred around from its inception? The chapter will address that question by working towards a synthesis of arguments, extending them to consider aspects of digital scholarly editing such as paradigmatic views, Lotmannian notions of a 'semiosphere' and 'technosphere', and the applicability of Heideggerian thought (or criticism thereof). This serves to bridge earlier discussions of disciplinarity and modelling discourses in the digital humanities and culminates in the proposal of a modelling system for scholarly editions that promotes the idea of superstructures and metastructures.

This calls for testimony by people who have witnessed life, who put it on canvas or write it or put it in sound. What you see then is something that tells the truth about you. To define ourselves means defining a great many other things.

James Baldwin, "The Image: Three Views—Ben Shahn, Darius Milhaud and James Baldwin Debate the Real Meaning of a Fashionable Term," in: *Conversations with James Baldwin*, ed. by Fred H. Stanley and Louis H. Pratt, Jackson / London: University Press of Mississippi, 1989, 24–31, here 26 [originally published in *Opera News* 27 (1962), 9–12].

VI

the superstructure model

as a frame of reference

I remain intrigued by the use of the term *witness*. A word both mechanical and spiritual. Heard in courtrooms and places of worship. To have witnessed something is to have seen it. To recount it is to testify to it. A testimony is all that remains. If you give it some thought, it is rather curious that textual criticism refers to different surviving instances of texts as 'witnesses' – as if they had a personhood. As if they were recalling something from their own memory and relating it to the reader during the act of reading. A testimony is a report of that which was said, documenting it as a past event. A witness is someone who has yet to say what they ought to say or has said something they may not say again. A witness may change their account. A witness may misremember. A witness is not a record. Why do we use such language? I do wonder. There is nothing in the practice of textual scholarship that suggests an awareness of this strange fact. It might be that everyone is focused on etymological origins that justify an impersonal use, but the German term *Zeuge*, as in *Textzeuge*, could not be confused with *Zeugnis*. To bear witness, the most obvious example of witness as testimony in English, would be translated as *Zeugnis ablegen*. A *Zeuge* is someone who does so. Did those who established this terminology feel that texts were alive? It does recall what Auguste Grimm reported about the death of her uncle Jacob Grimm in 1863, describing the scene a day later: "He lies on his bed with this look of kind-heartedness that was the pulse of his life: one does not want to leave him, his books surround him like orphans."[1]

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1 Friedrich Stroh, *Handbuch der germanischen Philologie*, Berlin: De Gruyter, 1985, 74 [originally published in 1952], original: "Er liegt so mit dem Ausdruck der

The term 'witness' does not say as much about the material basis of editions, perhaps, as it does about those who create them. Editors do not file testimonies. In their self-conception, they are not clerks. They are judges who interrogate and question all that is presented to them (and all that they request to be presented; and all that they retrieve from a cabinet in the basement themselves). What is the hearing that they preside over? It is a case of reconstruction, we know that much. What is the outcome of the trial? This is where the metaphor falls apart. Scholars are not out to convict. They are out to convince. If it is a matter of life and death, then only because the study of that which came before, left for those who come after, is meant to transcend. The boundaries of our existence, unknowable and immovable, pale in light of all that lies beyond. I am afraid that it was, once again, Erwin Panofsky who may have said it best: "Gazing as they do at these frozen, stationary records of which I said that they 'emerge from the stream of time,' the humanities endeavour to capture the processes in the course of which those records were produced and became what they are."[2]

A.
FROZEN RECORDS

What kinds of records can we distinguish? Panofsky speaks of "*records left by man*"[3] by which he means "[m]an's signs and structures"[4] that "'recall to mind' an idea distinct from their material existence."[5] According to this understanding, the human ability to "perceive the relation of signification"[6] provides the foundation for humanistic study.

Herzensgüte, die der Pulsschlag seines Lebens war, auf seinem Bett: man möchte ihn gar nicht verlassen, seine Bücher umstehen ihn wie Waisen."

2 Erwin Panofsky, "The History of Art as a Humanistic Discipline," in: *Meaning in the Visual Arts: Papers in and on Art History by Erwin Panofsky*, New York: Doubleday Anchor Books, 1955, 1–25, here 24 [originally published as "Introductory," in *Studies in Iconology: Humanistic Themes in the Art of the Renaissance*, New York: Oxford University Press, 1939, 3–31].

3 Ibid., 5.

4 Panofsky 1939/1955, 5.

5 Ibid.

6 Panofsky 1939/1955, 5.

He further distinguishes between these records by categorizing them as *documents* – "instrument[s] of investigation, or 'secondary material'"[7] – and *monuments* – "object[s] of investigation, or 'primary material'"[8] –, all the while pointing out, crucially, that the same object may be regarded as one or the other, depending on the disciplinary point of view;[9] what may be an object of study in one field of research, such as, in his example, an altarpiece for an art historian, where the argumentation may be supported by another object, such as a contract, could be reversed in another field of research, such as the contract becoming the object of study for a palaeographer and pictorial material becoming part of the documentation.[10]

Another way of classifying records is to regard them as historical source material in the vein of Johann Gustav Droysen, i.e. to differentiate between *Überrest* ('relic' – that which has survived arbitrarily and unintentionally) and *Tradition* ('tradition' – that which was preserved for posterity on purpose).[11] We need not delve into this topic any further but it should be kept in mind that textual criticism in its European 19th century form arose from this milieu or at the very least from a concurrent milieu and that scholarly editing as the practice of textual criticism owes its formative raison d'être to the same. Scholarly editing, on a very basic level, is part of a critical process that aims to make 'records' available and, more importantly, seeks to penetrate the static state of the "frozen,

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7 Ibid., 10.
8 Panofsky 1939/1955, 10.
9 Ibid. For a detailed discussion of Erwin Panofsky's distinction between 'monuments' and 'documents' as two types of records, see John Guillory, "Monuments and Documents: Panofsky on the Object of Study in the Humanities," in: *History of Humanities* 1/1 (2016), 9–30, online: <https://doi.org/10.1086/684635>.
10 Cf. Panofsky 1939/1955, 10.
11 It was Ernst Bernheim who complemented Droysen's *Überrest* concept with what he called *Tradition* although it should be noted that Droysen himself had a notion of the same category, only with a different name (*Quellen*, sources); furthermore, Droysen proposed a third category connecting the other two (*Denkmäler*, monuments); cf. Droysen 1868, 14 (§ 21) and Ernst Bernheim, *Einleitung in die Geschichtswissenschaft*, Leipzig: G. J. Göschen, 1905, 83–102. See also Ahasver von Brandt, *Werkzeug des Historikers: Eine Einführung in die historischen Hilfswissenschaften*, Stuttgart: Kohlhammer, 1958, 58–76. For a succinct appraisal, see Robert Kretzschmar, "Absichtlich erhaltene Überreste: Überlegungen zur quellenkundlichen Analyse von Archivgut," in: *Archivar* 67/3 (2014), 265–269.

stationary records"[12] by "enlivening what otherwise would remain dead."[13]

How can scholarly editions give life to the 'frozen' material? The aspects of collation and annotation have been mentioned before, but we need to understand what that means: It means to contextualize, to compare, to *connect;*[14] it means to piece the available primary and circumstantial evidence together, to recognize gaps in the tradition, to make informed decisions about the way in which to bridge them; it means to enrich the material with information that may have been self-evident to contemporary readers and viewers; it means to divide the intellectual entity that we view as a 'work' or 'corpus' into units of meaning, to search for the manifestation of these units in documents that bear witness, and to re-join them in the ideational whole that prompted their finding. This does not have to be done in a digital edition – but it is striking that Hans Walter Gabler, in unwitting accordance with Erwin Panofsky, has stated that "we read texts in their native print medium […] but we study texts and works in editions – in editions that *live* in the digital medium."[15]

Common wisdom would suggest that whether something comes *alive* in a given medium very much depends on the responsiveness of its recipients, so it is noteworthy that Hans Walter Gabler describes digital scholarly editions as living in their medium *per se*, imbuing that particular environment of publication with a sense of birth, change, and – even if unintended – death. What excites him most is the prospect of hypertextuality and thus he states that "[e]ditions may in that environment be set up as complex instruments for exploration"[16] to provide the

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12 Panofsky 1939/1955, 24.
13 Ibid.
14 This is indeed what Panofsky had in mind, for he saw "'enliven[ing]' the past" as a "methodological necessity" rather than a "romantic ideal" (Panofsky 1939/1955, 24, fn. 19) and stated that the humanities "can express the fact that the records *A*, *B* and *C* are 'connected' with each other only in statements to the effect that the man who produced the record *A* must have been acquainted with the records *B* and *C*" (ibid.) and so on. Furthermore, he emphasized that "[i]t is just as inevitable for the humanities to think and to express themselves in terms of 'influence,' 'lines of evolution,' etc., as it is for the natural sciences to think and to express themselves in terms of mathematical equations" (ibid.).
15 Gabler 2010, 46. Emphasis by myself.
16 Ibid.

"novel opportunity of interlinked textual and contextual study in the multi-connectable virtuality of the digital medium."[17] In his description, or perhaps rather vision, of digital editions, he sees them as "designed and […] researchable as relational webs of discourse, energized […] into genuine knowledge sites."[18]

It should be mentioned that his conception of digital editions as 'knowledge sites' is a reference to Peter Shillingsburg's invocation of the idea in his book *From Gutenberg to Google* (2006)[19] which in turn was already premised on similar ventures by Paul Eggert, Peter Robinson, and others.[20] Shillingsburg describes his understanding of 'knowledge sites' as follows:

> The space and shape I will try to describe is one where textual archives serve as a base for scholarly editions which serve in tandem with every other sort of literary scholarship to create knowledge sites of current and developing scholarship that can also serve as pedagogical tools in an environment where each user can choose an entry way, select a congenial set of enabling contextual materials, and emerge with a personalized interactive form of the work (serving the place of the well-marked and dog-eared book), always able to plug back in for more information or different perspectives.[21]

This view of scholarly editions is predicated on an intermediation of information that exposes clashing scenarios of use: that of editions as stable knowledge (re-)sources and that of editions as dynamic knowledge generators. The former offers citation, the latter arbitration. An

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17 Gabler 2010, 46.
18 Ibid.
19 Cf. Peter L. Shillingsburg, *From Gutenberg to Google: Electronic Representations of Literary Texts*, Cambridge: Cambridge University Press, 2006, especially chapter 4, 80–125.
20 Cf. Krista Stinne Greve Rasmussen, "Reading or Using a Digital Edition? Reader Roles in Scholarly Editions," in: *Digital Scholarly Editing: Theories and Practices*, ed. by Matthew James Driscoll and Elena Pierazzo, Cambridge: Open Book Publishers, 2016, 119–136, here 125, online: <https://doi.org/10.11647/OBP.0095>. Rasmussen primarily refers to Eggert's use of the term 'work-site' (in a play on the term 'website') and Robinson's advocacy of 'distributed, interactive editions'.
21 Shillingsburg 2006, 88.

edition might be capable of servicing both, so long as they are understood as distinct intents and purposes. If editions are reduced to interactive platforms altogether, however, their essential academic function must be considered lost. Grounding editions solely in literary scholarship and 'textual archives' neglects a vast majority of cultural heritage and 'contextual materials' and calls the claim of networked 'knowledge' into question (if we consider knowledge to be more than what can be expressed in textual form). 'Enlivening what otherwise would remain dead' might require a cross-medial, cross-disciplinary approach precisely for this reason. How does an image of the past and all contained within form in our heads? Imaginatively, deductively. Deducted from what? Imagined from where? Reasoning emerges from immersion; immersion is tempered by reason. Reason is that which our bounded place in time and space grants us, distributed in uneven measures.

We may think of it this way: "[T]he humanities endeavour to transform the chaotic variety of human records into […] a cosmos of culture."[22] That cosmos is "determined by a cultural theory of relativity"[23] and it is, "like the cosmos of nature, […] a spatio-temporal structure."[24] Panofsky explains this by stating:

> Two historical phenomena are simultaneous, or have a determinable temporal relation to each other, only in so far as they can be related within one 'frame of reference,' in the absence of which the very concept of simultaneity would be as meaningless in history as it would in physics.[25]

In other words: Intertextuality as well as intermediality and other kinds of relational deductions exist within a spatio-temporal fabric. This fabric accords cultural sentiments and their manifestations the framework within which they can relate to each other; this relation may be implicitly or explicitly evident in a record, that is to say, an artefact, a document,

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22 Panofsky 1939/1955, 6.
23 Ibid., 7.
24 Panofsky 1939/1955, 7.
25 Ibid.

something that carries something meaningful, meaningfully representative, or otherwise intentional on something material and thereby attests to the ideational network among which it was birthed. It is of little use to observe that something occurred in the year 1600 unless we specify that it occurred in the year 1600 in the city of Strasbourg or in the year 1600 on the Yucatán Peninsula and even then, our observation becomes ever more useful, the more precise we can be about the *context* of our observation (since it will also make a difference whether something occurred in an affluent district, in a hospital for the poor, and so on). In order to know this context or to learn of it, we must study the records that form the basis of our assumptions, which means that they "have to be 'decoded' and interpreted"[26] to the degree that that is deemed possible as well as "classified and coordinated into a coherent system that 'makes sense.'"[27] Not only do we, as humanistic scholars, have to learn of the context from the records themselves, we have to be aware of the context that others have already observed, judge the merit of their contribution, and integrate what we learn into this existing 'cosmos' or refute the previous assumptions underlying it.

In terms of scholarly editions, this means to examine previous attempts at the scholarly edition of a given material or, in the absence thereof as well as in addition to it, to regard the work witnesses directly. There are then primarily two ways of *contextualization*, to wit, two ways in which to 'enliven' records and establish their relativity: (1) We can relate the ideational entity of the *work* to its frame of origin and reception, or: its place in the 'cosmos of culture' (which could but does not have to include questions of intent, purpose, and effect), and (2) we can relate the ideational manifestation of the work in material *witnesses* to each other in a frame of likeness and variance, or: their place in the 'cosmos of work' (or 'corpus' or whichever type of entity is chosen to represent the frame of reference).

For this, it principally does not matter what type of documentation of ideation we are concerned with; practically, it does matter insofar as the

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26 Panofsky 1939/1955, 7.
27 Ibid.

type of signification affects its reproducibility and representability and therewith the question whether it can and should be reproduced or represented in a 'decoded' way that can be compared, 'classified', and 'coordinated into a coherent system' (such as a scholarly edition) that may then be viewed in lieu of or as a supplement to its underlying sources.

On the level of the *work*, we have text works, picture works, film works, music works, game works, other types as well if a different definitional framework were used. On the level of scholarly editions, we have editions of text works and music works, and of those we mostly have editions of works that follow an Anglo-Eurocentric tradition of music notation as well as an Anglo-Eurocentric tradition of text notation.[28] More importantly, on the level of editorial theory, we have an international academic discourse dominated by Anglo- and Eurocentric traditions, be it Northern American notions of copy-text,[29] Biblical studies with a focus on Hebrew and Greek as well as Latin materials,[30]

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28 In an article asking how international scholarly editing is, Bodo Plachta considers the German, Anglo-American, French, and Italian traditions, with the Italian tradition not meriting its own section and being mentioned once as a 'language area' next to others where editorial practices have undergone transformation processes; cf. Bodo Plachta, "Introduction: How International is Scholarly Editing? A Look at Its History," in: *Scholarly Editing and German Literature: Revision, Revaluation, Edition* (Amsterdamer Beiträge zur neueren Germanistik; vol. 86), ed. by Lydia Jones, Bodo Plachta, Gaby Pailer and Catherine Karen Roy, Leiden: Brill Rodopi, 2016, 1–20, here 8. That a German scholar would concentrate on German editorial history is expected and the exchange and understanding or rather lack thereof between German, Anglo-American, and French (and one might add: Italian) editorial traditions is still something in need of discussion; however, given the question posed in the title of the article, it would have been interesting to learn something about the tradition of working with Arabic manuscripts or Hebrew, Ancient Greek, or Cyrillic material (or Sanskrit, or Kanji, and so on), particularly where such practices existed and exist outside of Anglo-American, German, and French spheres of influence and notions of what constitutes a scholarly edition; even a mere acknowledgement of a more global dimension of 'internationality' would have been appropriate. We can find a similarly narrow focus (when we compare the contents of the volume to the claim of its title) in Michael Stolz and Yen-Chun Chen (Eds.), *Internationalität und Interdisziplinarität der Editionswissenschaft* (editio / Beihefte; vol. 38), Berlin / Boston: De Gruyter, 2014.

29 See Kathryn Sutherland, "Anglo-American Editorial Theory," in: *The Cambridge Companion to Textual Scholarship*, ed. by Neil Fraistat and Julia Flanders, Cambridge: Cambridge University Press, 2013, 42–60.

30 For information on how editorial theory is rooted in biblical studies, see David Greetham, "A History of Textual Scholarship," in: *The Cambridge Companion to Textual Scholarship*, ed. by Neil Fraistat and Julia Flanders, Cambridge: Cambridge

the German penchant for historical-critical editions,[31] or the French *critique génétique*.[32] Emerging editorial schools of thought in South Africa, Japan, and India may be said to have been influenced thusly – or are said to have been influenced thusly by researchers like Shillingsburg himself –,[33] while Arabic manuscript studies, for example, have themselves a long tradition within a European context.[34] The question is whether there has ever been, at any point in the discourse on scholarly editing as sketched in this book, a multicultural, multidirectional exchange of ideas, issues, and insights, or whether it has been insulated from alternative approaches to the curation and presentation of 'non-traditional' – albeit *textual* – materials. The answer to that would appear to be that there has not.[35] To start from the basic assumption that there is an editorial theory that can be applied to *all* textual materials is, therefore, already incorrect, even if such a statement were refined to reflect the multitude of editorial

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University Press, 2013, 16–41. For editorial practices in relation to the Hebrew Bible, see also Ronald Hendel, *Steps to a New Edition of the Hebrew Bible* (Text-Critical Studies; vol. 10), Atlanta: SBL Press, 2016.

31 See, for an outside view on German editorial theory, Peter L. Shillingsburg, "A Resistence to Contemporary German Editorial Theory and Practice," in: *editio* 12 (1998), 138–150, online: <https://doi.org/10.1515/9783484604230.138>.

32 See, on German as well as French editorial theory, Geert Lernout, "Continental Editorial Theory," in: *The Cambridge Companion to Textual Scholarship*, ed. by Neil Fraistat and Julia Flanders, Cambridge: Cambridge University Press, 2013, 61–78.

33 Cf. Peter L. Shillingsburg, "Scholarly Editing as a Cultural Enterprise," in: id., *Textuality and Knowledge: Essays, University Park*, Pennsylvania: The Pennsylvania State University Press, 2017, 145–165; see for Shillingsburg's personal global experiences esp. 160–162 on South Africa, 162f. on India, and 163f. on Japan.

34 On the history of so-called 'oriental studies' (surely problematic terminology), see the series *The History of Oriental Studies*, ed. by Alastair Hamilton and Jan Loop <https://brill.com/view/serial/HOS> (accessed 8 September 2023). See also François Déroche, *Islamic Codicology: An Introduction to the Study of Manuscripts in Arabic Script*, London: Al-Furqān Islamic Heritage Foundation, 2006; Adam Gacek, *Arabic Manuscripts: A Vademecum for Readers*, Leiden [et al.]: Brill, 2009; and in particular, for the way in which it shows that Eurocentric ideas of scholarly editing are applied with the caveat that "certain needs specific to oriental texts" (Macé 2015, 321) have to be taken into account, Caroline Macé [et al.] (Eds.), "Textual Criticism and Text Editing," in: *Comparative Oriental Manuscript Studies: An Introduction*, ed. by Alessandro Bausi [et al.], Hamburg: Tredition, 2015, 321–466, online: <https://doi.org/10.5281/zenodo.46784>.

35 Or else Shillingsburg would not have felt compelled to ask and state, even within the Anglo-Eurocentric context: "Are there cultural problems to editorial problems? […] Language differences contribute to the isolation of editorial traditions." (Shillingsburg 2017, 145f.)

theories and traditions that exist within the Anglo- and Eurocentric discourse on this subject alone. There may be such a theory – but if there is, it has, to my knowledge, not been formulated with such a claim of universality (and the global diversity of cultural documents and phenomena it would have to encompass) in mind.

Two conclusions might be drawn from this: The first conclusion is that editorial theory, as any conceptual academic proposition, is and should be in a process of constant evolvement, no matter the pace or scope. The second conclusion is that editorial theories are so long sufficient as they satisfy the needs, wants, and purposes of the editor seeking to achieve a tangible goal: a scholarly edition. Challenges arise whichever way we turn as we seek to expand the editorial horizon, textually or otherwise. Stating this is merely a reminder that editorial theory as such cannot be thought of as being in a state of stasis. The conversation in this book is the same as all editorial conversation: No manuscript, no film, no painting, no building, in short: *nothing*, comes down to us as if nothing else had ever existed, around it, within it, before it, or after it. Scholarly editions can uncover aspects of each, dependent upon the intention of the editor(s), and as we have seen with the picture and film works discussed in previous chapters, this conversation has, in many regards, barely scratched the surface, leaving the process of uncovering itself in the dark; not because such processes do not exist, for there are plenty of them in scholarship, but because they are not integrated into the editorial project, if we can call it that. Perhaps it is time for a radical cut; for a new beginning, not in ignorance of that which has come before but in defiance of it. Perhaps the opposite is true; perhaps this marks a return to the roots. The present inquiry, drifting in a certain no-man's-land of interdisciplinarity, should conclude by folding three aforementioned aspects into the discussion: (1) the *digitality* of scholarly editing, (2) the *modality* of model-creation, and (3) the *structures* of editorial modelling. Those aspects are aspects that are, in some regard, universal or foundational, even if they are not – not primarily so, at least – concerned with the matter of mediality. Neither are we: for the interplay of components will always guide modelling concerns.

B.
THE DIGITAL PARADIGM

It is interesting to note that digital scholarly editions are generally understood to be digital based on their result rather than the process that led there. If there is an interest in process, it is often an interest in 'tools' and 'automization', a regulatory notion of isolation, workflows, milestones. A 'tool' does not a 'process' make. Neither does a 'website' an 'edition', for that matter. This is not to say that there are no ways to partition editorial decision processes.

An example of this can be seen in **FIG. 51** which is neither tailored to a particular kind of scholarly edition nor all-encompassing in its envisioned scenarios, even if it does cover a range of options and courses of action an editor might choose to take, based on the specific circumstances of the individual editorial endeavour. Although this graph supposes that an editor faced with a multi-transmitted work would want to collate the witnesses before making a judgement as to the witnesses' inclusion or exclusion in an edition, it is conceivable that an editor might decide this beforehand, e.g. if the intention of the edition was to present a singular witness, known to be best-preserved or in some other way remarkable, with commentary but without an extended regard for the transmission of the work otherwise. An editor might also choose to collate some witnesses and disregard others, in order to tailor the scope of the task to the objectives they realistically want to attain. Generally, it is conceivable and even expected that an editor will weigh all editorial decisions in relation to the particular demands of their project. For the sake of clarity, I have chosen to design this decision tree in a way so as to emphasize how an editor *might* proceed with a certain degree of rigour. They might take some of the outlined steps partially or not at all, and they might take other steps not included here, especially if the granularity of the process were to be adjusted. They might also take these steps in different orders, in iterative cycles, and so on. Whether a scholarly edition of something should be made without any presence of primary evidence, even if fragmentary, is another question altogether; but cases like the *Hortus Deliciarum* edition have shown that there are editions which rely heavily on circumstantial evidence such that it could be reasonably

viewed as pseudo-primary evidence. Of course, if neither primary nor circumstantial evidence exists, the entire undertaking would appear to be moot.

These are some of the caveats one could discuss in relation to a visualization like this; nonetheless, it provides us with a guideline of focal points, the actual practice of which we can interrogate. As it stands, the decision tree is media-agnostic – what would it mean if we were to introduce those variables? To complement the more abstract decision-making process, we could begin by saying 'if witness A is a text, then this and that follows from it' or 'if witness B is a picture, then this and that follows from it'. Alternatively, albeit still not precise enough: 'if witness A, B, and C are extant in textual form, then we may lemmatize and collate these texts' or 'if witness A, B, and C are extant in pictorial form, then we may highlight parts and collate these highlights'.

Trivial though it may seem, it is prudent to reiterate that like can only be compared with like. A witness, such as a manuscript, might contain multi-medial units of meaning and if these are multi-transmitted and if we wish to compare them, we must be mindful that what we would be comparing would never be 'the witness' with 'another witness' but rather a subsection or subpart of a work and therefore a subsection or subpart of a witness of the work with a subsection or subpart of another witness of the work. This leads us to the first question: What do we **collate** and how do we collate it, exactly? Next: How do we **comment** on the source material, how do we **annotate** it, how many layers of explication do we envision as necessary versus nice-to-have, what do they apply to? Does the circumstantial evidence that we have allow us to **reconstruct** elements *within* the work, i.e. the 'text' (in the sense that this is what a work used to be seen as in an edition), does it allow us to reconstruct elements *surrounding* the work, i.e. within the 'context', or does it allow for both? Do we 'improve' upon that which we are editing, do we **emendate** it, do we erase that which we perceive as flaws, do we insert corrections, do we construct an idealized and optimized 'main work' from a 'main witness'? Do we normalize spelling, add punctuation, manipulate an image in colour or brightness or contrast, do we render film material to look 'better than new'? To continue with that line of thought, do we **present** the material and 'the work' in a way that we would deem

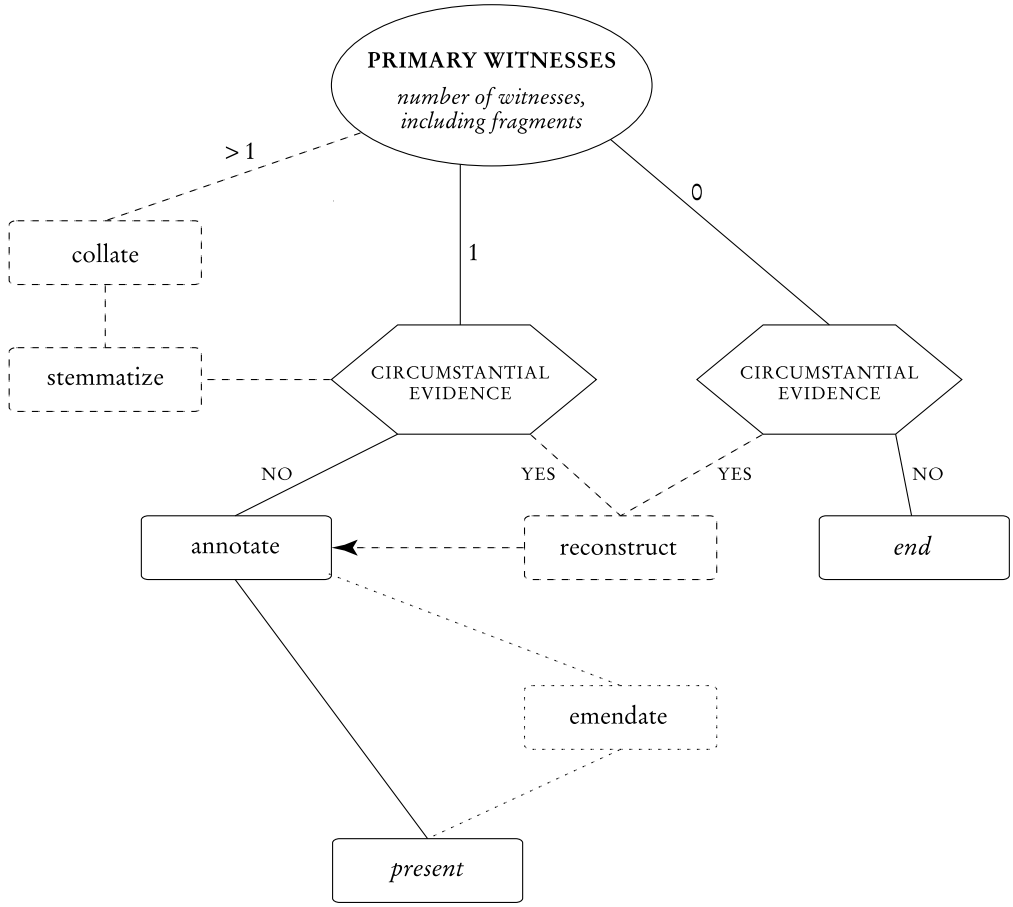


FIG. 51: Example of an editorial decision tree.

most 'authentic'? What are the divisible parts of the presentation? The work in its different components, the preliminary introductions and explanations of editorial principles, the commentary? Data visualizations, statistical analyses, search functions?

As may have become clear from my phrasing, there are many moving parts in an edition, especially if designed to operate in a digital environment, and those parts all, in one way or another, have to be considered in the creation of an edition, no matter the base medium of the source material or the target medium of the edition; a picture or film work might subject us to slightly different terminology, but the overarching concerns are the same. The questions are similar. The answers may diverge in the specifics.

A key aspect where we can expect that to be the case – especially in the context of variant transmission – is the aspect of collation and subsequently *representation*. Collation and representation are inherently related if the representation of a work is taken to include the explicit display of transmission variance. To 'know' transmission variance, we have to collate and compare the witnesses. To represent it, we have to present it (which is not the same as to say that we have to describe or transcribe it). We may be able to describe and transcribe variance, but it is also conceivable that we may only 'know' variance by understanding that *something* is different, which, in itself, is indicative of an awareness of a part or even the whole as a part of a larger cultural web, demarcated in some way. With textual works, we tend to be able to tell quite definitively what is different, at least if we regard it from a simplified perspective: A word, a letter, the order of words, an inclusion or exclusion of letters or words or punctuation or spaces, capitalization or a lack thereof. What such differences between witnesses signify can be categorized further into scribal error, intentional semantic change, physical deterioration of the manuscript or material otherwise, correction by a later hand, and so on. That layer of editorial judgement informs the (re-)construction of works in scholarly editions but it is not, I would like to emphasize, a prerequisite for recognizing differences between textual witnesses. That is why longstanding digital humanities projects like *CollateX* exist that attempt to collate textual witnesses computationally or, more specifically, with the aid of algorithms, accounting for the base layer of difference

that I have outlined.[36] One of the algorithms used for this was developed by Ronald H. Dekker and "aligns an arbitary [sic!] number of text versions, optimizes the local alignment of partial tokens sequences (phrases) and detects transpositions."[37]

It is often said that text can be tokenized.[38] This statement might provoke protest, but if we leave nuanced discussions of the term 'text' itself aside and operate on a level that is intuitively understood, text, if thought of as strings and characters, is at the very least susceptible to fragmentation and segmentation. Visual works are not deemed reproducible on a symbolic level akin to the transcription of text because they may employ a seemingly infinite number of symbols, as well as employ them in a way that is highly individualized and deemed inseparable from its expression of meaning.[39]

If we assume that text can be tokenized, and if we assume that that plays a role in our ability to *process* it computationally, and if we furthermore assume that that has a bearing on or relation to the matter of semantic representability, and if we also assume that the semantic representability of picture and film works is of interest to us, then the next question would always seem to be: Can they be represented thus as well? Is there any way in which to divide them in order to collate them? I say that this would *seem* to be the next question, as I have long since become convinced that that is the wrong question to ask. There must be points

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36 See <https://collatex.net/> (accessed 15 September 2023). See also on this topic Georg Vogeler, "Digitale Editionspraxis: Vom pluralistischen Textbegriff zur pluralistischen Softwarelösung," in: *Textgenese in der digitalen Edition* (editio / Beihefte; vol. 45), ed. by Anke Bosse and Walter Fanta, Berlin / Boston: De Gruyter, 2019, 117–136, here 127f., online: <https://doi.org/10.1515/9783110575996-008>. See, furthermore, the survey of similar tools and techniques (such as *WinMerge* and *diff*) that Vogeler references in ibid., 127, fn. 53.

37 <https://collatex.net/doc/#dekker-algorithm> (accessed 15 September 2023).

38 Some might say that text is, essentially, nothing but a string of tokens. Others would disagree. For a summary of different text conceptions from the perspective of digital scholarly editing, see Sahle 2013c, 1–60.

39 Of course, even when it comes to the transcription of text, things are not as simple as they might seem at first glance and many have problematized the supposedly self-evident nature of transcription; in the context of digital scholarly editing, Elena Pierazzo has summarized the discussion (and how it relates 'marks on a document page' to 'tokens') in Pierazzo 2016, 70–74.

of comparison. But points of comparison must not be confused with the comparison of representations. The obsession with representation overlays, in my view, discussions of digital scholarly editing specifically and has kept them restrained in a mindset that I would, in hindsight, characterize as misguided. There is much to debate here, too much for me to accurately summarize, but I do wish to point out a few aspects worth noting (perhaps even vitally so):

What *is* a digital scholarly edition? What is a non-digital scholarly edition? Most would take a digital edition to mean an 'electronic edition' and there was, indeed, a time where this used to be common terminology.[40] A more specific definition can be found in information theory (if applied to the definition of information) and computer engineering (if applied to the way in which that information may be represented through signals). Within the field of digital humanities, eminent scholar C. M. Sperberg-McQueen has centred many presentations on this topic.[41] Essentially, it concerns the division of information into analogue

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40 See, for example, Shillingsburg 1996, 165, where Shillingsburg speaks of the 'electronic scholarly edition'. See also Burnard, O'Brien O'Keeffe and Unsworth eds. 2006. In some cases, the use of 'electronic edition' has persisted even after the rise of the 'digital' paradigm. See, for example, Thomas Stäcker who speaks of an *elektronische Edition* ('electronic edition') throughout an article on 'scholarly publishing in the digital age' in Thomas Stäcker, "Wie schreibt man Digital Humanities richtig? Überlegungen zum wissenschaftlichen Publizieren im digitalen Zeitalter," in: *Bibliotheksdienst* 47/1 (2013), 24–50, online: <https://doi.org/10.1515/bd-2013-0005>. See also Thomas Stäcker, "Creating the Knowledge Site: Elektronische Editionen als Aufgabe einer Forschungsbibliothek," in: *Digitale Edition und Forschungsbibliothek: Beiträge der Fachtagung im Philosophicum der Universität Mainz am 13. und 14. Januar 2011* (Bibliothek und Wissenschaft; vol. 44), ed. by Christiane Fritze [et al.], Wiesbaden: Harrassowitz, 2011, 107–126, and Ray Siemens [et al.], "Pertinent Discussions Toward Modeling the Social Edition: Annotated Bibliographies," in: *Digital Humanities Quarterly* 6/1 (2012), online: <http://digitalhumanities.org/dhq/vol/6/1/000111/000111.html> (accessed 15 September 2023). Further evidence of the use of 'electronic editions' in place of digital scholarly editions in the early 2000s are, by way of example, Michael Stolz, "New Philology and New Phylogeny: Aspects of a Critical Electronic Edition of Wolfram's Parzival," in: *Literary and Linguistic Computing* 18/2 (2003), 139–150, online: <https://doi.org/10.1093/llc/18.2.139>, and Hans Walter Gabler, "Towards an Electronic Edition of James Joyce's Ulysses," in: *Literary and Linguistic Computing* 15/1 (2000), 115–120, online: <https://doi.org/10.1093/llc/15.1.115>.

41 See his opening lecture "Towards a Critique of Digital Reason" at the 10th European Summer University in Digital Humanities *Culture & Technology* (ESUDH 2019), Leipzig, Germany, 23 July 2019, online: <http://doi.org/10.5281/zenodo.3351703>, and

and digital representations,[42] with analogue representations being "based on an analogy of properties between the representation and the represented"[43] and digital representations being "based on the use of a finite number of discrete symbols to represent information."[44] This notion that "physical phenomena are used to represent sequences of binary digits (zero or one), and sequences of binary digits are then interpreted as integers, real numbers, characters, or other 'primitive' data types"[45] is a fairly prevalent one, as is the notion that images contain 'continuous' information and are therefore 'analogue' in nature whereas texts contain 'discrete' units and are therefore 'digital' – we find this, for example, in Kari Kraus' elaboration on *picture criticism*, where it is paired with the Goodmannian distinction between autographic and allographic works.[46]

These types of understandings, rooted, in the case of Sperberg-McQueen and co-author Dubin, in the work of mathematician Keith Devlin, he himself having based his theories on the work of analytic

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his closing keynote "Kritik der digitalen Vernunft" at the DHd 2018 Conference, Cologne, Germany, 3 March 2018, online: <https://www.youtube.com/watch?v=J6csNv-v5TIk> (video recording, accessed 15 September 2023). See furthermore his presentation "The Hermeneutics of Data Representation" at the conference *Representing Knowledge in the Digital Humanities*, University of Kansas, USA, 24 September 2011, online: <https://www.youtube.com/watch?v=BF_g1WvDDtU> (video recording, accessed 15 September 2023).

42 On the general analogue/digital distinction, see Jens Schröter and Alexander Böhnke (Eds.), *Analog/Digital – Opposition oder Kontinuum? Zur Theorie und Geschichte einer Unterscheidung*, Bielefeld: transcript, 2004.

43 C. M. Sperberg-McQueen and David Dubin, 'Data Representation,' in: *DH Curation Guide: A Community Resource Guide to Data Curation in the Digital Humanities*, first published in 2012, online: <https://guide.dhcuration.org/contents/data-representation/> (accessed 15 September 2023).

44 Ibid.

45 Spergberg-McQueen and Dubin 2012.

46 Cf. Kraus 2013, 237: "Where words are conventionally allographic, images are typically thought to be autographic: they operate through what we now think of as 'analog' representational methods, with smoothly continuous rather than discrete and stepwise units of information. The marks through which they are constituted often shade into one another and don't appear to organize into abstract types whose individual members can be freely exchanged with one another [...]. The last two decades of textual criticism have witnessed a wealth of scholarship contesting the validity of these distinctions and exploring the text's bibliographic or iconic codes. However, despite the virtues of such visual approaches to textuality (and there are many), a number of the traditional functions of textual scholarship require a different semiotic framework to make them intelligible from a historical and technological perspective."

philosopher Fred Dretske,[47] entertain questions of information flow and suppose that there ought to be an information extraction through processes of perception and cognition, from analogue to digital, the "loss […] of information […] [being] compensated for by a very definite gain, in that there occurs a classification of the perceived information."[48] They also persist in the view that it is "by the use of concepts to classify perceived (i.e. incoming) information that such information becomes available for (semantic) processing."[49]

Definitions of this type, that may or not may not be considered outmoded, have an interesting consequence for the conversation surrounding digital scholarly editions: If we think of the distinction between analogue and digital as a distinction between a continuous and discrete flow of information, then the editions that we think of as 'printed editions' are not analogue at all but digital as well – in this perspective, every scholarly edition is a digital edition, since it is always a consequence of a processing of information from the original source material into a segmented, annotated, and, in the textual tradition importantly so, transcribed form.[50] Furthermore, as N. Katherine Hayles has pointed out, "[d]igital computers do not necessarily have to operate with binary

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47 See Fred I. Dretske, *Knowledge and the Flow of Information*, Cambridge, Massachusetts: MIT Press, 1981.

48 Keith Devlin, *Logic and Information*, Cambridge: Cambridge University Press, 1995, 19 [first paperback edition; originally published 1991].

49 Ibid.

50 Andreas Beinsteiner chooses to speak of 'digital operativity' instead of digitality (as in the simple analogue/digital, continuous/discrete distinction) for exactly this reason: "An understanding of digitality that lacks ambition and merely refers to the discrete composition of a sign system misleadingly suggests that society has been digital since the emergence of alphabetical script at least which would be an inappropriate relativization of the innovative and distinct nature of computer-based technology." (Andreas Beinsteiner, "Für eine Phänomenologie digitaler Operativität: Zur Transformation unseres Wirklichkeitsverhältnisses im Zuge der Digitalisierung," in: *Faktum, Faktizität, Wirklichkeit: Phänomenologische Perspektiven* (Phänomenologische Forschungen; suppl. 5), ed. by Inga Römer and Georg Stenger, Hamburg: Felix Meiner, 2023, 431–454, here 435, original: "Ein anspruchsloser Digitalitätsbegriff, welcher lediglich die diskrete Verfasstheit eines Zeichensystems meint, verleitet nämlich zu der Einschätzung, Gesellschaft sei ohnehin zumindest bereits seit dem Aufkommen der alphabetischen Schrift digital gewesen, was eine unangemessene Relativierung der Neuheit und Andersartigkeit computerbasierter Technologie mit sich brächte.")

code"[51] and there are also analogue computers to consider,[52] if we wanted to be pedantic about such matters. The equation of 'digital editions' with 'online presentations' (which is based on a viewpoint, if not viewport, rather than 'a result' as such) is also curious because a printed edition may well be viewable on a screen – and either may have been created with computational aid (unless one were to exclusively use pen, paper, and similar methods in the creation of a printed edition, beginning to end; difficult to imagine as it is nowadays).

Clearly, the point of contention cannot be whether something was either created on or viewed with the help of a 'computer', in the broadest of terms. Proponents of digital scholarly editions are wont to invoke a certain 'logic' of creating such editions, primarily in the distinction of a 'data layer' and a 'presentation layer'.[53] This would seem to imply that the facilitation of 'semantic processing' is a fundamental aim of digital scholarly editions. No example of such value presently existing comes to mind, unless one were to count the ability to query texts towards it. One would rarely require intricate mark-up for this, however. If anything, what we see in the 'digital paradigm' of scholarly editing would rather appear to be an extension of the *notational iconoclasm*[54] that has rendered editorial theory at large incapable of perceiving cultural heritage in any terms other than those of 'representation' and those representations in any terms other than 'enrichment'. This is not limited to digital editions or textual scholarship, if we remember efforts to establish notations of movement and dance, for example,[55] but it is pronounced with digital

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51 Hayles 2004, 75.

52 See Bernd Ulmann, *Analog Computing*, München: Oldenbourg, 2013, and Bernd Ulmann, *Analog and Hybrid Computer Programming*, Berlin / Boston: De Gruyter, 2020.

53 Cf. Stäcker 2020 or Sonja Glauch, "Welche Lebenserwartung haben digitale Editionen?" in: *Digitale Mediävistik: Perspektiven der Digital Humanities für die Altgermanistik* (Beiträge zur mediävistischen Erzählforschung; special issue 12), ed. by Elisabeth Lienert [et al.], Oldenbourg: BIS, 2022, 65–75, online: <https://doi.org/10.25619/BmE20223195>.

54 If we were to borrow Michael Camille's aforementioned concept of 'philological iconoclasm', cf. Camille 1998, 44.

55 Existing types of movement or dance notation are, for example, the *Labanotation* or *Kinetography Laban* developed by the Hungarian dancer and theorist Rudolf von Laban (1879–1958) or the *Eshkol-Wachman Movement Notation* developed in Israel;

editions, i.e. editions accepted as such by the scholarly community. One would think that the self-evident multimediality of those editions, fortuitous as it may be, would mitigate such ingrained effects of book culture, but it seems to me that the opposite is the case: The more we find images entering the picture, the more scholars retreat to the learned practice of trying to divide their observations into representational cues. All has to be mapped. Everything named. Nothing left as is. (And this is where we might begin to see the connection to the notion of *as-if*.)

In his discussion of a bibliographic view on a collection of poems, Jerome McGann once stated something that should be relevant here:

> [We] would probably do better to approach the work primarily in terms of facsimile rather than in terms of critical editing. In facsimile editing primary attention gets focused on the physical document as a whole rather than on small details of textual variation.[56]

While this continues to conflate critical editing with textual scholarship, it does point towards the integration of other views on the material that is so very apparent but so rarely addressed in scholarly editing; namely the idea that there must be representations beyond notation, if there are to be representations.

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see Ann Hutchinson Guest, *Labanotation: The System of Analyzing and Recording Movement*, London / New York: Routledge, ⁴2005 [originally published in 1954], and, for an interesting look at the way in which dance notation is explored in the context of robotics which may indicate an analogue/digital intersection, Jean-Paul Laumond and Naoko Abe (Eds.), *Dance Notations and Robot Motion* (Springer Tracts in Advanced Robotics; vol. 111), Cham [et al.]: Springer, 2016.

56 Jerome J. McGann, "Rossetti's Iconic Page," in: *The Iconic Page in Manuscript, Print, and Digital Culture*, ed. by George Bornstein and Theresa Lynn Tinkle, Ann Arbor: University of Michigan Press, 1998, 123–140, here 130. This also calls to mind what Karl Goedeke said in 1876 in his *Schiller* edition with regard to the manuscript tradition, cf. Wolfgang Lukas, Rüdiger Nutt-Kofoth and Madleen Podewski, "Zur Bedeutung von Materialität und Medialität für Edition und Interpretation: Eine Einführung," in: *Text – Material – Medium: Zur Relevanz editorischer Dokumentationen für die literaturwissenschaftliche Interpretation* (editio / Beihefte; vol. 37), ed. by Wolfgang Lukas, Rüdiger Nutt-Kofoth and Madleen Podewski, Berlin: De Gruyter, 2014, 1–22, here 5f., online: <https://doi.org/10.1515/9783110364408.1>.

If we consider the primary purpose of a scholarly edition to be a form of reproduction and thereby *representation*, and if we consider a transcription to be only one form of *abstraction* that does not entirely encompass an *extraction* of information, and if we furthermore consider that we ourselves through our *perception* and *cognition* of the source material perform a kind of information processing and that, for a *codification* of our observations, we do not necessarily require that semiotic discrete base level of abstraction but merely some layer of representation – even a continuous layer, if we want to call it that – to direct our observations to, and if we furthermore consider that a digitized mirror of the source material *is* that layer of representation, then the consequence is this – and I may be forgiven for stating the obvious, as I have not seen it stated clearly in a digital humanities context before (perhaps precisely because it should be self-evident):

The information that we have, in our mind, is the information that we can communicate. The information that we have *about* a 'unit of meaning' is the information that we can attach to or address to that 'unit of meaning' and in order to do that, we need to point at it. Where we have a transcription of those 'units', the answer is clear. But in the case where we have a different kind of surrogate, such as an image, the answer is clear as well: Instead of pointing at a *sign*, we point at a *space*. And in the case of films, we point at a *space* and a *time*. And in the case of music, we point at symbols, depending on the type of notation that may exist for it, and we point at a *time*. And, of course, in the cases where combinations exist, we can point at combinations. That is all there is to it. The representation of source material in a multimedia edition is not, in itself, an obstacle in 'the digital medium' and that is where the innovation of it lies. The digital paradigm, as practiced in scholarly editing today, is a *textual paradigm*, a notational paradigm, for no discernible reason. Whether the humanities will come to realize that thought dictated by tradition will not keep pace with invention driven by technology will be for the future to see. Lest I be misunderstood: I make no argument against texts as a source or texts as a mode of scholarly expression. That is not the issue. The issue is everything that lies beyond text, and all the ways in which we do and do not see it, consider it, and address it.

C.
CULTURAL MEMORY

Let us address the matter of space for a moment or rather that which it leads us to, which is related to semiotics but also goes beyond semiotics.[57] In this context and with that in mind, Juri Lotman's writings are worth mentioning, precisely because his theories accounted for an *overarching* view on culture.[58] It has been said that the work of Juri Lotman (and his Tartu-Moscow School of Semiotics) as well as the work of Mikhail Bakhtin anticipated the later so-called *spatial turn* in literary studies;[59] it has not yet, however, to my knowledge, been pointed out in clear terms that Lotman's writings also anticipated the highly influential theory of *conceptual metaphors* by Lakoff and Johnson – at least not

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57 Specifically in terms of 'spatiality' in editorial theory, which is not our primary concern, I would like to recall Herbert Kraft's 'theorem of spatiality'. Another example that could be mentioned is Hans Zeller's approach that saw him include the spatial position of a variant in his *apparatus criticus* in order to make the original material appearance reconstructable. He did this in the genetic-critical edition of Conrad Ferdinand Meyer's works but the approach was met with criticism and did not, ultimately, become widespread; cf. Rüdiger Nutt-Kofoth, "Textgenese analog und digital: Ziele, Standards, Probleme," in: *Textgenese in der digitalen Edition*, ed. by Anke Bosse and Walter Fanta, Berlin / Boston: De Gruyter, 2019, 1–22, here 13–15, online: <https://doi.org/10.1515/9783110575996-002>. For Hans Zeller's explanation of his approach, see, as also stated ibid., 13, fn. 48, Hans Zeller, "Zur gegenwärtigen Aufgabe der Editionstechnik: Ein Versuch, komplizierte Handschriften darzustellen (1958)," in: *Dokumente zur Geschichte der neugermanistischen Edition* (Bausteine zur Geschichte der Edition; vol. 1), ed. by Rüdiger Nutt-Kofoth, Berlin: De Gruyter, 2005, 194–214, online: <https://doi.org/10.1515/9783110926927.194> [originally published in: *Euphorion* 52 (1958), 356–377]. See also Lukas, Nutt-Kofoth and Podewski 2014, 4f.

58 For more information on Juri Lotman (the transliteration of his name may differ in the bibliographic references since they are being cited as they were published), see Frank Illing, "Jurij Michailovič Lotman (1922 – 1993)," in: *Klassiker der Soziologie der Künste: Prominente und bedeutende Ansätze*, ed. by Christian Steuerwald, Wiesbaden: Springer VS, 2017, 545–569, online: <https://doi.org/10.1007/978-3-658-01455-1_24>.

59 See Michael C. Frank, "Die Literaturwissenschaften und der spatial turn: Ansätze bei Jurij Lotman und Michail Bachtin," in: *Raum und Bewegung in der Literatur: Die Literaturwissenschaften und der Spatial Turn*, ed. by Wolfgang Hallet and Birgit Neumann, Bielefeld: transcript, 2009, 53–80, online: <https://doi.org/10.14361/9783839411360-003>, and Winfried Nöth, "The Topography of Yuri Lotman's Semiosphere," in: *International Journal of Cultural Studies* 18/1 (2012), 11–26, online: <https://doi.org/10.1177/1367877914528114>.

in the literature likely to cite the latter.[60] His structuralist approach is not just relevant for the mapping of space and spatiality in texts from a narratological point of view, it also provides useful vocabulary beyond,

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60 For their main work, see George Lakoff and Mark Johnson, *Metaphors We Live By*, Chicago: University of Chicago Press, 1980; see also George Lakoff and Mark Johnson, *Philosophy in the Flesh: The Embodied Mind and its Challenge to Western Thought*, New York: Basic Books, 1999. Connecting them to Lotman is not at all to say that they based their theory on him specifically since other influences would have to be cited for that (such as Max Black, see Black 1962 and a review that pointed out this omission at the time, J. P. Thorne, "George Lakoff and Mark Johnson, Metaphors We live By – Dwight Bolinger, Language the Loaded Weapon," review, in: *Journal of Linguistics* 19/1 (1983), 245–248, esp. 246); but a similarity in thought is evident. Lakoff and Johnson's explanation of "spatialization metaphors" (Lakoff and Johnson 1980, 17), especially of the orientational kind (for which, see ibid., 14–21), is very reminiscent of the way in which Lotman aligned spatial orientational structures in texts with metaphorical meanings; see, for a translated example, Jurij M. Lotman, *The Structure of the Artistic Text*, transl. by Ronald Vroon, Ann Arbor: University of Michigan, 1977, here 217–230. One reference to the relatedness of their theories can be found in an article by Han-Liang Chang, albeit in a footnote only: "Strikingly, the two schemata identified by Lakoff and Johnson (1999: 31–34), container schema logic and source-path-goal schema, are exactly the two models used by Lotman, viz. sphere and communication or information transmission." (Han-Liang Chang, "Is Language a Primary Modeling System? On Juri Lotman's Concept of Semiosphere," in: *Sign Systems Studies* 31/1 (2003), 9–23, here 16, fn. 7.) Additionally, it has been mentioned that both the writings of Lotman and the theories of Lakoff and Johnson bear similarities to the "Gedankengut" ('body of thought') of classical philologist Olga Freidenberg, cf. Annette Kabanov, *Ol'ga Michajlovna Frejdenberg, 1890–1955: Eine sowjetische Wissenschaftlerin zwischen Kanon und Freiheit* (Opera Slavica; vol. 41), Wiesbaden: Harrassowitz, 2002, 326; the difference being that Lotman played a crucial role in the rediscovery of her work and classified her as a "precursor to structuralist-semiotic research" (ibid., 1f.), whereas Lakoff and Johnson did not explicitly reference this tradition of thought. Whether they were altogether unaware of it, consciously or subconsciously, is another question. Interestingly, linguist Roman Jakobson, who was part of the Prague linguistic circle and influenced the work of Lotman (cf. Edna Andrews, *Conversations with Lotman: Cultural Semiotics in Language, Literature, and Cognition*, Toronto: University of Toronto Press, 2003, 22f.) and was furthermore certainly aware of him in return, taught at the MIT after his migration to the USA where his courses were attended by George Lakoff (cf. Stephan Kessler, *Theories of Metaphor Revised: Against a Cognitive Theory of Metaphor. An Advocacy of Classical Metaphor*, Berlin: Logos, 2013, 13f.). That Jakobson knew of Lotman can be attested by the fact that he shortly thereafter, in 1966, participated in one of the 'legendary' summer schools organized in Kääriku/Tartu by Lotman, cf. Silvi Salupere, "Tartu Summer Schools of Semiotics at the Time of Juri Lotman," in: *Chinese Semiotic Studies* 6/1 (2012), 303–311, here 307, online: <https://doi.org/10.1515/css-2012-0121>, and Igor Pilshchikov and Mikhail Trunin, "The Tartu-Moscow School of Semiotics: A Transnational Perspective," in: *Sign Systems Studies* 44/3 (2016), 368–401, here 380. Lotman also corresponded with Jakobson, cf. Pilshchikov and Trunin 2016, 372.

as evidenced by a collected volume from 2019 which contains English translations – in many cases for the first time – of some of his articles and essays pertaining to issues of cultural memory and history, written mostly in the later stages of his academic career, i.e. in the 1980s and 1990s.[61] In describing Lotman's whole body of work, editor Marek Tamm had this to say about the origin of his notion of 'culture' which was to be a common thread:

> Lotman's conception of culture was born in the 1960s, under the rising star of cybernetics and information sciences, which is why he conceives of culture first and foremost as an extensive and elaborate system of processing information. [...] In 1970, Lotman proposes a preliminary definition of culture as 'the sum of all nonhereditary information and the means of its organization and preservation' (Lotman 2000a [1970], 395). Even this early formulation reveals that, from a semiotic perspective, the preservation of information is as important in a culture as its transmission and organization.[62]

This names two important and familiar-sounding aspects that allude to reasons why Lotman might be of interest here: his inherent focus on a *processing* and *preservation* of information. In that sense, could it not be said that scholarly editing is an act of cultural memory production? It is, at the very least, reminiscent of Foucault's statement that academia "has a selective role: it selects knowledges."[63] Scholarly editions select, reproduce, and represent knowledges. They, together with cultural heritage institutions, determine the accessibility of materials or the provision of information *about* those materials based on an estimation of a reader's or viewer's interest. They, too, construct a canon of materials deemed

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61 See Marek Tamm (Ed.), *Juri Lotman – Culture, Memory and History: Essays in Cultural Semiotics. Translated from the Russian by Brian James Baer*, London: Palgrave Macmillan, 2019.

62 See Marek Tamm, "Introduction: Juri Lotman's Semiotic Theory of History and Cultural Memory," in: *Juri Lotman – Culture, Memory and History: Essays in Cultural Semiotics. Translated from the Russian by Brian James Baer*, ed. by Marek Tamm, London: Palgrave Macmillan, 2019, 1–26, here 5.

63 Foucault 1975–76/2003, 183.

worthy of the time and effort that must be invested in its 'processing', as well as reflect an unconscious preference and prioritization, not only of materials but of methods, concepts, and theories.

If we recall the question from **CHAPTER I** whether the digital humanities can be seen in the tradition of or even as a return to the principles of structuralism, then the way in which the digital humanities and in this case digital scholarly editing select and exert their influences on the discourse in return may be traced to this very book and this very chapter: How could the *theory* of digital scholarly editing, if grounded in precedent from the humanities, not enter into its own phase of (neo-)structuralism in the broadest sense of the word – not necessarily interested in uncovering structures but necessarily invested in *establishing* structures? If the processing of information, one way or another, lies at its core (and this may be up for debate), how could it not have to contend with the kind of scholarship that Lotman was engaged in, even though he was engaged in it in a different context and for a different purpose? Again, that is not to say that that is the only kind of reading one might want to pursue, especially given that different editors will always have different interests vis-à-vis the historicity of texts, the genesis of texts, the language of texts, or the mediality of 'works' beyond texts (if applied here to mean the distinction between texts, images, sound, film, and so on).[64] But consider this sentence by Lotman: "Memory is understood here in

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64 Although it stands to reason that Lotman's body of work should be of particular interest to those with an interest in computational literary and there especially narratological analysis, as illustrated by Amélie Zöllner-Weber referring to Lotman 1977 next to a reference to Fotis Jannidis in her discussion of creating an ontology for literary characters; cf. Amélie Zöllner-Weber, "Text Encoding and Ontology: Enlarging an Ontology by Semi-Automatic Generated Instances," in: *Literary and Linguistic Computing* 26/3 (2011), 365–370, here 367, online: <https://doi.org/10.1093/llc/fqr021>. Lotman has also been referenced by literary scholars in a context of traditional editorial theory, insofar as his structuralist approach to 'texts' is concerned (e.g. his concept of a *secondary modelling system*); see, for example, Oliver Jahraus, "Intertextualität und Editionsphilologie: Der Materialwert der Vorlagen in den Beiträgen Heinrich von Kleists für die Berliner Abendblätter," in: *editio* 13 (1999), 108–130, here esp. 120-122, online: <https://doi.org/10.1515/9783484604278.108>, and Klaus Kanzog, "Historizität und Aktualität: Semiotische Probleme des Erläuterns und Kommentierens," in: *editio* 7 (1993), 76–84, here 79, online: <https://doi.org/10.1515/9783110241983.76>.

the same sense as that used in information theory and cybernetics: as the ability of certain systems to record and accumulate information."[65]

It is strikingly easy to link this with the view of Panofsky, cited in part earlier, that "[m]an's signs and structures are records because, or rather in so far as, they express ideas separated from, yet realized by, the processes of signaling and building,"[66] meaning that they are testament to a human "[perception of] the relation of signification"[67] and a human "[perception of] the relation of construction."[68] If we believe, to follow Clifford Geertz, "that man is an animal suspended in webs of significance he himself has spun"[69] and if we therefore "take culture to be those webs,"[70] then their relationality – and moreover, the *perception* of their relationality –, as recorded over time, is woven into the fabric of cultural memory; and cultural memory, in that view, becomes in itself a record as well as a reservoir of recorded notions about those records. Scholarly editions testify to the same: In themselves records as well as a reservoir of recorded notions about those records. One must not share the opinion of Panofsky that every humanist is, "fundamentally, a historian"[71] – but any scholarly editor will inevitably encounter a historical situatedness of the material they are concerned with, no matter how recent or ancient; and they will, again, inevitably, by sorting through their methodological options, engage with a plane of information theory, whether consciously or not. Even beyond scholarly editing, this is evident. It was evident in Erwin Panofsky's methodologies which, in the art-historical horizon of this book, are the most obvious point of reference for a structured approach towards the semantic palpability of 'artwork' and its framework in the history of thought. Panofsky is not usually classified as a structuralist in the traditional sense but given this discussion, it should, perhaps,

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65 Tamm 2019, 21, fn. 4.
66 Panofsky 1939/1955, 5.
67 Ibid.
68 Panofsky 1939/1955, 5.
69 Clifford Geertz, "Thick Description: Toward an Interpretive Theory of Culture," in: id.: *The Interpretation of Cultures: Selected Essays,* New York: Basic Books, 1973, 3–30, here 5.
70 Ibid.
71 Panofsky 1939/1955, 5.

come as no surprise to learn that all roads lead to Rome: For, indeed, Claude Lévi-Strauss himself called Panofsky's work "une œuvre aussi pleinement et totalement structuraliste"[72] and anointed him a structuralist by stating that "if [he] is a great structuralist, it is first of all because he is a great historian."[73] Horst Bredekamp has analyzed Lévi-Strauss' motivations for 'claiming' Panofsky by relating them to his opposition to Roland Barthes' semiology.[74]

In 1990, Juri Lotman published a summation of his theories at the behest of an English publisher.[75] The book is titled *Universe of the Mind: A Semiotic Theory of Culture* and contains an introduction by Umberto Eco; Ann Shukman provided the translation.[76] In his introduction, Umberto Eco relays the "main principles of [Lotman's] research methods"[77] as follows:

> 1. The opposition of exact sciences and humanistic sciences must be eliminated. [...] 4. Semiotic systems are *models* which explain the world in which we live (obviously, in explaining the world, they also construct it, and in this sense, even at this early stage, Lotman saw semiotics as a cognitive science). Among all these systems, language is the *primary modelling system* and we apprehend the world by means of the model which language offers. Myth, cultural rules, religion, the language of art and of science are *secondary modelling systems*. [...] 5. If texts represent models of the world, the set of texts which is the culture of a period is a secondary modelling system. It is thus necessary to attempt to define a *typology of cultures*, in order both to discover universal aspects common to all cultures and

72 Claude Lévi-Strauss, *Anthropologie structurale* (vol. 2), Paris: Plon, 1973, 324.
73 Ibid., original: "Car, si cet auteur est un grand structuraliste, c'est d'abord parce qu'il est un grand historien."
74 Cf. Horst Bredekamp, "Claude Lévi-Strauss und Erwin Panofsky: Wort-, Bild- und Ellipsenfragen," in: *kritische berichte* 26/2 (1998), 5–15, here esp. 5–7, online: <https://doi.org/10.11588/kb.1998.2.10624>.
75 Cf. Tamm 2019, 4.
76 See Yuri M. Lotman, *Universe of the Mind: A Semiotic Theory of Culture*, transl. by Ann Shukman, London / New York: I.B. Tauris, 1990.
77 Umberto Eco, "Introduction," in: Yuri M. Lotman, *Universe of the Mind: A Semiotic Theory of Culture*, transl. by Ann Shukman, London / New York: I.B. Tauris, 1990, vii–xiii, here x.

> to identify the specific systems which represent the 'language' of Medieval culture or the 'language' of Renaissance culture.[78]

The first point reminds us of Jacob Grimm's assertion that the humanities are the 'inexact sciences'[79] and that the debate whether they *are* and whether they differ in that from other sciences might be of relevance for the digital humanities or humanities computing insofar as they are concerned with information processing, on which the matter of *exactness* might have some impact.[80] Exactness recalls yet another analogue/digital distinction that Alexander R. Galloway and Bernard Dionysius Geoghegan have discussed in reference to the founder of cybernetics, Norbert Wiener, who "interestingly suggested that the terms 'analog' and 'digital' should be replaced with the terms 'measuring' and 'counting.'"[81] This is interesting to me, as is the idea that there should be primary and secondary modelling systems. Again, I am aware that this is not the space to negotiate these towering questions that go to the somewhat hidden, somewhat obscured heart of the digital humanities as they exist today. There are so many aspects to reckon with, in terms of what we understand cultural memory to be, how we construct it, how we process it. And it is not only the idea of cultural memory that should concern us in any and all discussions of scholarly editions. The legacy of cybernetics, reaching out from past decades, brings with it another kind of reckoning, another kind of deconstruction of frameworks of reference in the digital humanities, one that could be avoided but should not be

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78 Ibid.
79 See Grimm 1884/2016.
80 Gerhard Lauer has discussed this in reference to Grimm with the argument that the digital humanities are, in fact, 'exact sciences'. See Gerhard Lauer, "Über den Wert der exakten Geisteswissenschaften," in: *Geisteswissenschaft – was bleibt? Zwischen Theorie, Tradition und Transformation* (Geist und Geisteswissenschaft; vol. 5), ed. by Hans Joas and Jörg Noller, Freiburg: Karl Alber, 2020, 152–173.
81 Alexander Galloway and Bernard Dionysius Geoghegan, "Shaky Distinctions: A Dialogue on the Digital and the Analog," in: *e-flux* 121 (2021), online: <https://www.e-flux.com/journal/121/423015/shaky-distinctions-a-dialogue-on-the-digital-and-the-analog/> (accessed 15 September 2023).

avoided. To speak with Jacob Grimm: Why should it not be said here?[82] I am, of course, referring to Martin Heidegger.

D.
A WORD ABOUT HEIDEGGER

One could write about scholarly editing and ignore Heidegger altogether. One could also participate in the digital humanities as such and ignore the traces of his writings and thought that occur frequently, if subtly. One cannot, however, venture into modelling and hermeneutics discourses in the digital humanities and ignore his influence altogether. I therefore wish to briefly address a few aspects of general interest and enter them into the scholarly record, so to speak, focusing on his relevance for modelling concerns in the digital humanities.

First of all, we can note that most digital humanities scholars interested in the epistemology of the field will draw on Heidegger sooner or later as a philosophical point of reference: This is true for David M. Berry,[83] Willard McCarty,[84] Joris van Zundert,[85] Geoffrey Rockwell and Stéfan Sinclair,[86] among others.[87] Often, these references will be made in passing and appear inconsequential, submerged in a tide of phenome-

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82 Cf. Grimm 1864, 157.

83 Cf. David M. Berry, "The Computational Turn: Thinking about the Digital Humanities," in: *Culture Machine* 12 (2011), [1–22], here [16f.], online: <https://culturemachine.net/the-digital-humanities-beyond-computing/> (accessed 20 September 2023); David M. Berry, *Critical Theory and the Digital*, New York [et al.]: Bloomsbury Academic, 2014, 49f., 59f., 89–120, 162f., 185f., 198–204.

84 Cf. McCarty 2005, 41–43.

85 Cf. van Zundert 2022, 53f., 247.

86 Cf. Geoffrey Rockwell and Stéfan Sinclair, *Hermeneutica: Computer-Assisted Interpretation in the Humanities*, Cambridge, Massachusetts / London: MIT Press, 2022, 20, 99–101, 203f.

87 Cf. e.g. Thomas Bedorf, "Maschinenhermeneutik," in: *Von Menschen und Maschinen: Mensch-Maschine-Interaktionen in digitalen Kulturen*, ed. by Selin Gerlek [et al.], Hagen: Hagen University Press, 2022, 16–31, here 25–29, online: <https://doi.org/10.57813/20220620-161525-0>; Richard J. Lane, *The Big Humanities: Digital Humanities/Digital Laboratories*, London / New York: Routledge, 2016, 22–35; Augustine Farinola, "Hermeneutical Postphenomenology: Computational Tools and the Lure of Objectivity," in: *Digital Scholarship in the Humanities* 38/3 (2023), 1078–1087, here 1083, 1085, online: <https://doi.org/10.1093/llc/fqac074>.

nology. "His influence," Mahon O'Brien writes, "has spread to fields as diverse as psychology/psychiatry and architecture and even those working in the digital humanities."[88] 'Even' – as if this were particularly incomprehensible. It is not, if we consider the reasons why that is the case; and we would be wise to approach it with care. In his seminal chapter about 'modelling' in *Humanities Computing* (2005), Willard McCarty, for example, introduces Heidegger to the conversation about modelling in humanities computing by quoting George Steiner and his statement from 1978 that "he has 'found Heidegger to be massively present and in the path of further thinking' […] – in other words, unavoidable."[89] In the grand scheme, this reasoning is awkward at best, given that Heidegger was heavily 'inspired by' German translations of East Asian philosophers and scholars like Okakura Kakuzō without ever naming his sources; one supposes the same logic should apply to them.[90] McCarty's other, more pertinent reason for discussing Heidegger in this very specific context, aside from a general import, is Heidegger's influence on theories of computing.[91] This particular appropriation that is also present in David M. Berry's writing[92] can be traced to Hubert Dreyfus[93] and,

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88 Mahon O'Brien, *Heidegger, History and the Holocaust*, New York [et al.]: Bloomsbury Academic, 2015, 4.

89 McCarty 2005, 41.

90 On this topic, see Reinhard May, *Heideggers verborgene Quellen: Sein Werk unter chinesischem und japanischem Einfluss. Im Anhang: Tomio Tezuka, Eine Stunde bei Heidegger. Japanisch/Deutsch*, Wiesbaden: Harrassowitz, ²2014 [originally published as *Ex Oriente Lux: Heideggers Werk unter ostasiatischem Einfluß*, Stuttgart: Franz Steiner, 1989]. The translation of this book was published in the 1990s, see Reinhard May, *Heidegger's Hidden Sources: East Asian Influences on His Work*, transl. by Graham Parkes, London / New York: Routledge, 1996. See, furthermore, Imamichi Tomonobu, *In Search of Wisdom: One Philosopher's Journey*, Tokyo: International House of Japan, 2004, 122–124, where the Japanese philosopher Imamichi Tomonobu recounts how Heidegger's *In-der-Welt-Sein* derives from Zhuangzi's *chushi* via a certain English wording of the concept in Okakura Kakuzō's *The Book of Tea*, the German translation of which was gifted to Heidegger by a Japanese student of his in 1919, Itō Kichinosuke, who would later become a professor of Imamichi and voice his dismay at the unacknowledged intellectual theft to him. When Imamichi related this in Germany at a lecture he had been invited to give by Hans-Georg Gadamer in 1968, Gadamer was indignant and severed contact until 1972 when they met again at a conference.

91 Cf. McCarty 2005, 41.

92 Cf. Berry 2014, 49, 99.

93 See the following verdict by Terry Winograd: "Dreyfus has also played a key role as the primary introducer and interpreter of Martin Heidegger to the computer and

in his wake, publications like *Understanding Computers and Cognition* (1986) from Terry Winograd and Fernando Flores which McCarty explicitly references.[94] Dreyfus and the way in which he has influenced the Anglophone reception of Heidegger has been described as 'Dreydegger'[95] and McCarty acknowledges this tradition in his later publications on modelling.[96]

The Dreyfusian reception of Heidegger is known for its fixation on the tool question: the famous example of the hammer and how it is in a 'place' in a space and how it is in relation to other 'tools' nearby and how and when it is being and how and why its use changes the perception of it, to abbreviate the more complex notion.[97] It is in this sense, a sense of craftsmanship and tool-being, that McCarty investigates the applicability of Heideggerian thought to modelling concerns in the digital humanities – by paralleling the manipulation of models with the use of tools as the "[primary] way of knowing objects."[98] This recalls the etymological origin of modelling in relation to 'moulding' a substance and pinpoints "skill-dependent practice"[99] as the dominant mode of scholarship emerging from computing in the humanities. Tying Heidegger's relevance for modelling to "skilled action"[100] is interesting insofar as it highlights a praxeological ontological perspective.

More interesting still is another perspective that the digital humanities have not yet considered, to the best of my knowledge. That perspective

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technical world. It is not a great exaggeration to say that discussions of Heidegger within that world are really discussions of Dreyfus's exposition of Heidegger [...]. This is certainly true of the book I wrote with Flores, which in turn was the first introduction to Heidegger for many people in computer and cognitive science." (Terry Winograd, "Foreword," in: *Heidegger, Coping, and Cognitive Science* (Essays in Honor of Hubert L. Dreyfus; vol. 2), ed. by Mark Wrathall and Jeff Malpas, Cambridge, Massachusetts: MIT Press, 2000, vii–ix, here ix.)

94 Cf. McCarty 2005, 41.

95 Cf. Martin Woessner, *Heidegger in America*, Cambridge: Cambridge University Press, 2010, 203–209, esp. 208.

96 Cf. McCarty 2018, 34, fn. 4; McCarty 2020, 216, fn. 7. Implicitly, this lineage is also present in his reference to Dreyfus in McCarty 2005, 42.

97 Cf. Martin Heidegger, *Sein und Zeit*, Tübingen: Niemeyer, [11]1967 [originally published in 1927], 69f., 102.

98 McCarty 2005, 42.

99 Ibid., 43.

100 McCarty 2005, 42.

is one of model-being and *Weltbezug* ('relation to the world')[101] if we subscribe to "the representationalist paradigm"[102] of 'the digital' as sketched earlier. In the field of philosophy, Andreas Beinsteiner has made the case that "digital operativity implicates a *reconfiguration of the relationship between meaning and materiality* that neutralizes their formerly irreducible tension to an unprecedented degree."[103] This is related to an increasing *Vereindeutigung* ('disambiguation') of the world as such.[104] The question underlying these transformations is not merely one of *as-if* or even the primary *Vorbild* and *Abbild* function of a model.[105] It is one of *as* – as what do we regard and interact with something and how does that shape our understanding of it? Rather than supposing that works of art seek to represent the world in a way that can in turn be represented as a representation of what which it is thought to represent, it is important to consider the structures of reference through which such works allow us to see our *lebensweltliche* ('lifeworld') existence in a different light.[106] In that view, "materiality interferes with the lifeworld structures of meaningfulness as established by the artwork"[107] and is crucial in maintaining the unintelligible quality that characterizes the ambiguity of cultural expression, keeping it in motion for the shifts of

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101 A mere note of interest: I suspect that questions of a *Weltbezug* of models will become one of the foremost debated topics in the digital humanities, especially in the context of large language models (LLMs), where N. Katherine Hayles has noted that "there are large gaps in the knowledge LLMs display, for they have no models of the world, only of language" (N. Katherine Hayles, "Afterword: Learning to Read AI Texts," in: *Critical Inquiry* (2023) [special issue *Again Theory: A Forum on Language, Meaning, and Intent in the Time of Stochastic Parrots*, ed. by Matthew Kirschenbaum], online: <https://critinq.wordpress.com/2023/06/30/afterword-learning-to-read-ai-texts/> (accessed 24 September 2023), comment in response to Pawel Kaczmarski).
102 Beinsteiner 2023, 432, original: "[…] *das repräsentationalistische Paradigma*."
103 Ibid., 435, original: "[…] dass digitale Operativität eine *Rekonfiguration des Verhältnisses von Sinn und Materialität* mit sich bringt, die deren – vormals irreduzible – Spannung in präzedenzlosem Umfang neutralisiert."
104 Cf. Beinsteiner 2023, 453, and Thomas Bauer, *Die Vereindeutigung der Welt: Über den Verlust an Mehrdeutigkeit und Vielfalt*, Ditzingen: Reclam, 2018.
105 On the topic of the *Bild* and model-being as *Abbild* and *Vorbild* (on the basis of an *Urbild*), see also the representational function of an image as discussed by Husserl in the context of art, cf. Beinsteiner 2023, 436f.
106 Cf. ibid., 438.
107 Beinsteiner 2023, 439, original: "Materialität […] interferiert mit dem lebensweltlichen Bedeutsamkeitsgefüge, welches das Kunstwerk etabliert."

perspective that characterize interpretation. Modelling 'the world' might be as misguided as modelling 'text', so long as there is no consensus as to the nature of those models, what they are being modelled for, and what lies beyond their reach. Here it would seem that Heidegger's writings should be of interest for further discussions.

That these discussions have not taken place, at least not at a significant interdisciplinary intersection, may be partially blamed on Heidegger's controversial views on technology, expressed in lectures and one essay in particular,[108] of which McCarty himself noted that it was not as relevant for digital humanities concerns as his philosophical contributions in *Sein und Zeit* (1927).[109] The controversy generally lies in what is seen as Heidegger's scepticism towards the rise of technology and the way in which his language[110] and convictions may be said to be entangled with the antisemitism of his time.[111] (That he was a fervent supporter of the

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108 See Martin Heidegger, "Die Frage nach der Technik (1953)," in: id., *Gesamtausgabe. I. Abteilung: Veröffentlichte Schriften 1910–1976* (vol. 7: Vorträge und Aufsätze), Frankfurt am Main: Vittorio Klostermann, 2000, 5–36. See also his lecture, Martin Heidegger, "Das Ge-Stell (1949)," in: id., *Gesamtausgabe. III. Abteilung: Unveröffentlichte Abhandlungen – Vorträge – Gedachtes* (vol. 79: Bremer und Freiburger Vorträge), Frankfurt am Main: Vittorio Klostermann, 1994, 24–45. This lecture contains one of the few explicit references Heidegger made to the Holocaust: "Inzwischen ist jedoch auch die Feldbestellung in das gleiche Be-stellen übergegangen, das die Luft auf Stickstoff, den Boden auf Kohle und Erze stellt, das Erz auf Uran, das Uran auf Atomenergie, diese auf bestellbare Zerstörung. Ackerbau ist jetzt motorisierte Ernährungsindustrie, im Wesen das Selbe wie die Fabrikation von Leichen in Gaskammern und Vernichtungslagern, das Selbe wie die Blockade und Aushungerung von Ländern, das Selbe wie die Fabrikation von Wasserstoffbomben."

109 Cf. McCarty 2005, 41.

110 For an in-depth analysis of how Heidegger developed his vocabulary and view on 'machinery' as inspired by Ernst Jünger and Oswald Spengler, see Oliver Müller, "Ge-stell und Megamaschine: Zur Genese zweier Deutungsapparaturen," in: *Mensch-Maschine-Interaktion: Handbuch zu Geschichte – Kultur – Ethik*, ed. by Kevin Liggieri and Oliver Müller, Stuttgart: J.B. Metzler, 2019, 88–94.

111 The study provided by Donatella Di Cesare links Heidegger's 'personal' 'metaphysical' antisemitic views with his 'philosophical' project and his views on technology; see Donatella Di Cesare, *Heidegger and the Jews: The Black Notebooks*, transl. by Murtha Baca, Cambridge / Medford: Polity, 2018 [originally published as *Heidegger e gli ebrei: I 'Quaderni neri'*, Turin: Bollati Boringhieri, 2014]. Jewish people are being "seen as rootless agents of modernity, accused of machination to seize power" (ibid., ix), *Machenschaft* ('machination') itself being linked to technology since it implicates, in Heidegger's writing, "manipulative domination, the new categorical imperative that frenetically ran through the world of technology, where there was no longer anything

NS regime as well as a fervent antisemite is beyond doubt[112] and not only since the publication of the *Black Notebooks* at that,[113] if we remember Derrida's meditation on Heidegger's relationship with Nazism at a conference in 1987.[114] We may also note that Hans-Georg Gadamer,

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that could not produce or be produced" (Di Cesare 2018, 96). Di Cesare's analysis runs deeper than can be portrayed here. See also Müller 2019, 91, and furthermore the verdict by Richard Wolin that due to this inseparability, "Heidegger's criticism of technology will not be of use anymore in the future" (Richard Wolin, "Heideggers 'Schwarze Hefte': Nationalsozialismus, Weltjudentum und Seinsgeschichte," transl. by Jürgen Zarusky, in: *Vierteljahrshefte für Zeitgeschichte* 63/3 (2015), 379–410, here 410, online: <https://doi.org/10.1515/vfzg-2015-0022>, original: "Heideggers Technik-Kritik [ist] künftig nicht mehr brauchbar").

112 Defenses of Heidegger's antisemitism such as those by literary scholar Silvio Vietta are not credible since they do not argue the facts but instead seek to excuse them by re-framing them, engaging in a type of *Täter-Opfer-Umkehr* that barely merits discussion. Heidegger's branding of Jewish people as having 'a gift for calculation', as being complicit in their own destruction, and as living according to a 'race principle' is, for example, justified by Vietta with reference to Hannah Arendt and a self-imposed 'Jewish isolation' as the cause of rising antisemitism rather than the consequence of it, with only a tepid acknowledgement that "Heidegger, in his linking of [...] the cultural form of 'empty rationality' that he fights against and Judaism, misses that Jews, from the perspective of cultural history, were also driven into isolation" (Silvio Vietta, "Heideggers Hölle: Eine Replik auf Luca Di Blasis Heidegger-Kritik," in: *Allgemeine Zeitschrift für Philosophie* 40/1 (2015), 83–100, here 95, original: "Was Heidegger in seinem Verbindungsschluss zwischen dieser von ihm bekämpften seinsgeschichtlichen Kulturform einer 'leeren Rationalität' und dem Judentum allerdings entgeht, ist, dass Juden kulturgeschichtlich auch in die Isolation getrieben und in solche Rechner-Berufe gedrängt wurden [...]."). For a description of Vietta's apologetic 'Heidegger scholarship' which is rooted in close familial relations, see Peter Trawny, *Heidegger-Fragmente: Eine philosophische Biographie*, Frankfurt am Main: S. Fischer, 2018, 250–254; see also Jan Süselbeck, "Die Chiffre der planetarischen Technik: Keine Stunde Null in Todtnauberg. Soziologische Studien helfen dabei, die antisemitischen Symbole der ‚Seyns'-Philosophie Martin Heideggers zu entschlüsseln," in: *literaturkritik.de* 6 (2015), online: <https://literaturkritik.de/id/20648> (accessed 24 September 2023).

113 For a collection of articles on this topic, see Andrew J. Mitchell and Peter Trawny (Eds.), *Heidegger's Black Notebooks: Responses to Anti-Semitism*, New York / Chichester: Columbia University Press, 2017, and Marion Heinz and Sidonie Kellerer (Eds.), *‚Schwarze Hefte': Eine philosophisch-politische Debatte*, Berlin: Suhrkamp, 2016.

114 Later printed as Jacques Derrida, *Of Spirit: Heidegger and the Question*, transl. by Geoffrey Bennington and Rachel Bowlby, Chicago: Chicago University Press, 1989 [originally published in French as *De l'esprit*, Paris: Éditions Galilée, 1987]. Of interest here is also a meeting of Derrida and Gadamer in 1988 where these questions were discussed in the aftermath of the controversial release of Victor Farías, *Heidegger et le nazisme*, Lagrasse: Verdier, 1987 (in addition to his own research, Victor Farías compiled evidence unearthed by others such as Hugo Ott and Guido Schneeberger); see Mireille Calle-Gruber and Peter Engelmann (Eds.), *Jacques Derrida, Hans-Georg Gadamer,*

a student of Heidegger who we usually find cited as a neutral arbiter on hermeneutical matters, was a profiteer of the NS system himself, even though he positioned himself quite differently to Heidegger after the war.[115] Both Gadamer and Heidegger are the primary representatives of

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Philippe Lacoue-Labarthe. Heidegger: Philosophische und politische Tragweite seines Denkens. Das Kolloquium von Heidelberg. Mit einer Notiz von Jean-Luc Nancy, transl. by Esther von der Osten, Wien: Passagen, 2016 [originally published in French as *La conférence de Heidelberg – Heidegger: portée philosophique et politique de sa pensée avec Jacques Derrida, Hans-Georg Gadamer, Philippe Lacoue-Labarthe*, ed. by Mireille Calle-Gruber, Fécamp: Nouvelles Éditions Lignes, 2014]. The literature on the intense debate in the 1980s and 1990s about Heidegger and his links with Nazism is too numerous to cite. A contemporary literature review can be found in Klaus L. Berghahn, "Der Fall Heidegger," in: *The German Quarterly* 63/2 (1990), 260–275.

115 In contrast to Heidegger, Gadamer spoke about his time during the war afterwards. For one such instance in 1988, see Calle-Gruber and Engelmann eds. 2016 – although it should also be mentioned that when it came to Heidegger, Gadamer de-emphasized the significance of his political as well as ideological involvement with the NS system quite deliberately by mounting a defense essentially characterizing Heidegger's involvement as a hapless, naïve, and clumsy episode premised "on the incompetence of philosophers" (Di Cesare 2018, 15) in such matters, an argument that has not aged particularly well since we now know the extent to which Heidegger was embedded in the system and how fundamentally his thinking was rooted in and informed by his contemporaries. It is not without reason that Erwin Panofsky, for example, declined an invitation to the University of Freiburg in the 1950s since Heidegger was also expected to attend – and Panofsky had not forgotten Heidegger's speech upon becoming rector of the university in 1934. In a letter to Kurt Bauch, Panofsky stated that it was not the fact of Heidegger accepting the rectorate that he could not forgive but the "actual content of his speech (and a few more things)" (Erwin Panofsky, *Korrespondenz 1910 bis 1968: Eine kommentierte Auswahl in fünf Bänden* (vol. 4: Korrespondenz von 1957 bis 1961), ed. by Dieter Wuttke, Wiesbaden: Harrassowitz, 2008, 268, original: "[...] es ist nicht die Tatsache seiner Rektoratsübernahme, sondern der tatsächliche Inhalt seiner Rede (und manches andere), das ich ihm nicht verzeihen kann"). As for Gadamer, most notably, in terms of the direct influence of the NS system on academic work, he participated in the *Aktion Ritterbusch* in the 1940s which was a concerted action meant to 'deploy' the 'German humanities' in the service of war. Frank-Rutger Hausmann has done important work in uncovering this part of academic entanglement with the NS regime; see Frank-Rutger Hausmann, *‚Deutsche Geisteswissenschaft' im Zweiten Weltkrieg: Die ‚Aktion Ritterbusch' (1940–1945)*, Heidelberg: Synchron, ^{3}2007 [originally published in 1998]; Gadamer is mentioned throughout but see, for example, 129. See also Frank-Rutger Hausmann, *Die Geisteswissenschaften im ‚Dritten Reich'*, Frankfurt am Main: Vittorio Klostermann, 2011, 116. Teresa Orozco was one of the first to challenge the fact that there had been no *causa Gadamer* where there had been a *causa Heidegger* and argued that Gadamer's work has to be read through the lens of his 'political hermeneutics' and his opportunistic careerism during the time of the NS regime, leading to later redactions of some of his writings from the 1940s and a repositioning and reflection after the war which trivialized personal responsibilities; see Teresa Orozco, *Platonische Gewalt:*

philosophy and the humanities cited in the aforementioned *Understanding Computers and Cognition* (1986) by Winograd and Flores.[116]) In his monograph on *Heideggers Philosophie der Medialität* (2021), Beinsteiner acknowledges Heidegger's antisemitism but dismisses the notion that this should have tainted his philosophy and rendered it useless (his philosophy understood as media philosophy, in this case).[117] Certainly, Heidegger's influence on the philosophy of technology as well as on media studies cannot be denied,[118] and to be silent on either, as the digital humanities have been, despite Heidegger demonstrably featuring in digital humanities curricula,[119] is not satisfactory. Research literature reflects conversations. For there to be no conversation about these difficult, often entangled, sometimes political, in this case even moral dimensions belies the claim to scholarly engagement that the digital humanities wish to make.

In terms of modelling theories and concerns, one might, for example, recognize the need for an 'ecosystem' of interdependency that connects

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Gadamers politische Hermeneutik der NS-Zeit, Hamburg/Berlin: Argument, 1995. Her analysis was taken up by Richard Wolin in a magazine article (see Richard Wolin, "Nazism and the Complicities of Hans-Georg Gadamer: Untruth and Method," in: *The New Republic* (15 May 2000), 36–45) and both Orozco and Wolin were subsequently criticized (see Richard E. Palmer, "A Response to Richard Wolin on Gadamer and the Nazis," in: *International Journal of Philosophical Studies* 10/4 (2002), 467–482). The debate continued in Bruce Kajewski (Ed.), *Gadamer's Repercussions: Reconsidering Philosophical Hermeneutics*, Berkeley [et al.]: University of California Press, 2004, section III. 'Gadamer in Question,' 169–306. Hans Jörg Sandkühler has stated that he does not think of Gadamer's writings as being "belastet" ('tainted') in the way that the work of other German philosophers who continued their career in post-war Germany was, as in evidently being *anschlussfähig* ('compatible') with NS ideology, save for the ex post facto deletions and redactions that purged the most obvious connectivity; cf. Hans Jörg Sandkühler, "Kaum einer, der sich nicht angepasst hätte," interview by Catherine Newmark, in: *Philosophie Magazin* special issue 3 (2014), 57–62.

116 Cf. Terry Winograd and Fernando Flores, *Understanding Computers and Cognition: A New Foundation for Design*, Norwood: Ablex, ^{5}1990, 27–37 [originally published in 1986].

117 Cf. Andreas Beinsteiner, *Heideggers Philosophie der Medialität*, Frankfurt am Main: Vittorio Klostermann, 2021, 9f.

118 Cf. on this argument of a Heidegger effect already having been woven into the histories of these disciplines, Beinsteiner 2021, 10–12.

119 Cf. Stephen Ramsay, "Programming with Humanists," in: *Digital Humanities Pedagogy: Practices, Principles and Politics*, ed. by Brett D. Hirsch, Cambridge: Open Book Publishers, 2012, 217–240, here 238.

the world-being of technology with the world-being of being human, insofar as that is a world-being of *culture*, without foregoing argument nor critique. When Heidegger writes in the 1960s that "it might be that history and tradition will be flattened into the uniform storage of information and that they will be, in that form, made available to the inevitable design that a controlled humanity requires"[120] and that it furthermore "[remains the question] if thinking, too, will perish in the information gears or if it is destined to a down-fall into the shelter of its concealed-from-self origin,"[121] the ominous sentiment may be traced both to his antisemitically and conspiratorially charged mindset as well as to his contemporaneity with cybernetics, which he declared the successor discipline of philosophy shortly before his death.[122] A Heidegger scholar might make more sense of this than we can do – but I wanted to include this excursion here to imply: maybe we should try.

E.
LOTMAN'S SEMIOSPHERE

Returning to Lotman and his concept of modelling systems, there is another idea that might make for a worthwhile exploration in connection with the themes posed so far: that of a *technosphere* contrasted against a *semiosphere* (the former of which is sometimes described in terms of

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120 Martin Heidegger, *Wegmarken*, Frankfurt am Main: Vittorio Klostermann, 1967, VIIf. (preliminary remark written in Freiburg i. Br., beginning of summer 1967), original: "Es kann auch sein, daß Geschichte und Überlieferung auf die gleichförmige Speicherung von Informationen eingeebnet und als diese für die unumgängliche Planung nutzbar gemacht werden, die eine gesteuerte Menschheit benötigt. Ob dann auch das Denken im Informationsgetriebe verendet oder ob ihm ein Unter-Gang [sic!] in den Schutz durch seine ihm selbst verborgene Herkunft bestimmt ist, bleibt die Frage." Alternative translation: "Maybe history and tradition will fit smoothly into the information retrieval systems which will serve as resource for the inevitable planning needs of a cybernetically organized mankind. The question is whether thinking too will end in the business of information processing." (Michael Heim, "The Computer as Component: Heidegger and McLuhan," in: *Philosophy and Literature* 16/2 (1992), 304–319, here 305.)
121 Ibid.
122 Cf. Martin Heidegger, "Nur noch ein Gott kann uns retten," interview by Rudolf Augstein and Georg Wolff, in: *Der Spiegel* 23/30 (31 May 1976), 193–219, here 212 [interview conducted in 1966, published posthumously].

machinery reminiscent of Heidegger's 'cybernetic anxiety').[123] Lotman's semiosphere is said to be "a metaphor, which offers a spatial model for the interpretation of culture"[124] and, in his body of work, "mark[s] a gradual spatial turn from his earlier more strictly structuralist phase [...] to a more dynamic and in some respects post-structuralist phase of his semiotics."[125]

In his aforementioned *Universe of the Mind* (1990), Lotman focuses the entire second half of the book on the topic:

> By analogy with the biosphere (Vernadsky's concept) we could talk of a semiosphere, which we shall define as the semiotic space necessary for the existence and functioning of languages, not the sum total of different languages.[126]

With regard to the *sphere* term, Han-Liang Chang has pointed out that "the word is so frequently used by Lotman that its semantic precision is blurred."[127] We also find this with other *spheres*, such as Vernadsky's *biosphere* which has to be understood in conjunction with his concept of a *noosphere* that he developed together with Pierre Teilhard de Chardin and Le Roy,[128] N. Katherine Hayles' *cognisphere*,[129] or the *technosphere*

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123 "The potentials and constraints that the digital technosphere will pose on the dynamics of the global semiosphere are unforeseeable. [...] The question is whether the design and optimization of such systems, and the conditions or constraints that they may impose on cultural dynamics, are independent of the signification sphere of the cultural products circulating in the semiosphere, which is mediated by such digital platforms." (Luis E. Bruni, "Sustainability, Cognitive Technologies and the Digital Semiosphere," in: *International Journal of Cultural Studies* 18/1 (2015), 103–117, here 112, online: <https://doi.org/10.1177/1367877914528121>.)

124 Nöth 2015, 11.

125 Ibid., 12.

126 Lotman 1990, 123.

127 Chang 2003, 14. For a list of different meanings, see ibid., 15f.

128 The noosphere denotes a transformation of the biosphere through the application of human reason and the resulting activity and "is [its] final evolutionary stage [...] in terms of its geological historical development on earth." (Andrews 2003, 57.) See also Olga Lavrenova, *Spaces and Meanings: Semantics of the Cultural Landscape*, Cham: Springer Nature, 2019, 16–19.

129 "Expanded to include not only the Internet but also networked and programmable systems that feed into it, including wired and wireless data flows across the electromagnetic spectrum, the cognisphere gives a name and shape to the globally interconnected

which, too, "evokes the image of a harmonization of world-spanning technology."[130] The question is: How can any such concept be delineated? Or is it meant to indicate a planetary suffusion of 'the world' with stages of progress that we relate to stages of civilization? In Lotman's case, his definition is delineated with container logic and the notion of a *boundary*:

> But the unity of the semiotic space of the semiosphere is brought about not only by metastructural formations: even more crucial is the unifying factor of the boundary, which divides the internal space of the semiosphere from the external, its *inside* from its *outside*. [...] Every culture begins by dividing the world into 'its own' internal space and 'their' external space.[131]

These divisions are created through binary oppositions, such as "*up* and *down*."[132] Although Lotman wrote about diverse cultural subjects, including a *Semiotics of Cinema* (1976)[133] and broad issues of cultural memory and history, his application of this concept tends towards literary studies, such as when he examines how geographical space is modelled and conceptualized in Russian medieval texts.[134] What use might it be for the conceptualization of scholarly editions *beyond text*, then?

First of all, we could, for our own purposes, redefine what we understand a *boundary* to be. We could take the view that the semiosphere,

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cognitive systems in which humans are increasingly embedded. As the name implies, humans are not the only actors within this system; machine cognizers are crucial players as well." (N. Katherine Hayles, "Unfinished Work: From Cyborg to Cognisphere," in: *Theory, Culture & Society* 23/7-8 (2006), 159–166, here 161, online: <https://doi.org/10.1177/0263276406069229>.)

130 Birgit Schneider, "Mensch-Maschine-Schnittstellen in Technosphäre und Anthropozän," in: *Mensch-Maschine-Interaktion: Handbuch zu Geschichte – Kultur – Ethik*, ed. by Kevin Liggieri and Oliver Müller, Stuttgart: J.B. Metzler, 2019, 95–105, here 95, original: "Sie [die Technosphäre] evoziert das Bild einer Vereinheitlichung weltumspannender Technik." See Schneider 2019 also for an exploration of the origin of the concept and how it is related to Vernadsky's noosphere.

131 Lotman 1990, 130f.

132 Ibid., 132.

133 See Jurij M. Lotman, *Semiotics of Cinema*, transl. by Mark E. Suino, Ann Arbor: University of Michigan Press, 1976.

134 Cf. Lotman 1990, 171–177.

as a world of ideas that has manifested in meaningful representations, is not so much *language*-bound as it is *material*-bound and that we can reproduce – not analyse, reproduce – its manifestation with respect to its spatial existence on a physical carrier and its temporal existence in its sequentiality while at the same time viewing it as part of a meaningful *Überbau*, the semiosphere. We could view the 'work' as an ideational boundary and the edition as concerned with what is *inside* it while at the same time acknowledging that there is an *outside* inside of which the work in turn resides. We could relate Lotman's semiosphere to Panofsky's "cosmos of culture."[135] We could relate both to Shillingsburg's concept of "knowledge sites"[136] that externalize and serialize staggered layers of information. We could seek to study how the 'semiosphere' might intersect with the 'technosphere' and we could use this to reflect on scholarly editions as cultural memory products:

> What changes with digital culture is the dimension of the memory store to which the individual mind has access and the modes of navigating and interacting with such semiotic space, that is, the off-loading (Dror and Harnad, 2008), or maybe rather up-loading, of the semiosphere in the navigable memory store of the technosphere.[137]

In essence, and in keeping with what has been said before, we might want to think about a conceptual 'ecosystem' for scholarly editions, the architecture of their information structures and their relationship with both the semiosphere and the technosphere, insofar as we suppose that those exist; a sphere of communicated meaning and a sphere of technological realization. We could ask, for example: Is not every record of cultural memory – if we define cultural memory here to include only the kind of records that we can describe or, more generally put, the kind of memory that can be recorded, which would still, in a different disciplinary

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135 Panofsky 1939/1955, 6.
136 Shillingsburg 2006, 88.
137 Bruni, 2015, 107f.

perspective, exclude important aspects of oral tradition, for example[138] – manifested *in* or *through* a technosphere and has that not always been true? Is every digital scholarly edition a meeting of a concept descended from or formulated in the semiosphere and a code ascended from or formulated in the technosphere? What would be the equivalent model in printed scholarly editing? How are the technological, economical, ecological conditions and resources for the production of culture changing, how are the conditions for the production of scholarly editions changing with them?[139]

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138 The notion of a 'record' and how something might be 'recorded' could or rather should be a subject of debate. On the topic of oral history and its challenges and possibilities, see Donald A. Ritchie (Ed.), *The Oxford Handbook of Oral History*, Oxford: Oxford University Press, 2012. One might also ask whether the phenomenon of transgenerational trauma, studied in the fields of epigenetics, psychology, and beyond constitutes its own type of cultural memory or cultural memory artefact; see Gabriele Schwab, *Haunting Legacies: Violent Histories and Transgenerational Trauma*, New York: Columbia University Press, 2010, esp. 29f. It should be noted that findings in epigenetics with respect to trans- or intergenerational trauma are not uncontroversial, see Rachel Yehuda, Amy Lehrner and Linda M. Bierer, "The Public Reception of Putative Epigenetic Mechanisms in the Transgenerational Effects of Trauma," in: *Environmental Epigenetics* 4/2 (2018), online: <https://doi.org/10.1093/eep/dvy018>. There are many more ways to think and talk about cultural memory of course; see – as a starting point – Astrid Erll and Ansgar Nünning (Eds.), *Cultural Memory Studies: An International and Interdisciplinary Handbook* (Media and Cultural Memory; vol. 8), Berlin: De Gruyter, 2008, and, for a German historiographical perspective, Otto Gerhard Oexle, "Memoria als Kultur," in: *Memoria als Kultur* (Veröffentlichungen des Max-Planck-Instituts für Geschichte; vol. 121), ed. by Otto Gerhard Oexle, Göttingen: Vandenhoeck & Ruprecht, 1995, 9–78; Thomas Schilp and Caroline Horch (Eds.), *Memoria – Erinnerungskultur – Historismus: Zum Gedenken an Otto Gerhard Oexle (28. August 1939 – 16. Mai 2016)*, Turnhout: Brepols, 2019; and Aleida Assmann, *Erinnerungsräume: Formen und Wandlungen des kulturellen Gedächtnisses*, München: C.H. Beck, 1999.

139 In the context of digital humanities research in general, see, for one view on this that makes use of a concept of 'technohumanism', Anne Balsamo, "The Digital Humanities and Technocultural Innovation," in: *Digital Media: Technological and Social Challenges of the Interactive World*, ed. by Megan Alicia Winget and William Aspray, Lanham [et al.]: Scarecrow Press, 2011, 213–225. Right at the beginning of her essay, she recurs to Carl Mitcham's identification of "Lewis Mumford, Jose Ortega y Gasset, Martin Heidegger, and Jacques Ellul as the four founding figures of a specifically *humanistic philosophy* of technology" (ibid., 213). Mitcham, writing earlier, at least briefly acknowledged the issue of Heidegger's entanglement with Nazism, cf. Carl Mitcham, *Thinking Through Technology: The Path Between Engineering and Philosophy*, Chicago: University of Chicago Press, 1994, 57. On a matter related to changing 'production' environments, see Smithies 2017, especially the chapter on 'The Ethics of Production',

For now, we might make use of Lotman's structural container logic to think about digital scholarly editions as modelling systems rather than entities that require *a* model or *a* conceptual model and *a* data model. As seen in our study of picture works and film works, there are ways to conceive of a division of observations and there are ways to conceive of an open, if oscillating division between *Befund* ('description') and *Deutung* ('interpretation'). The question now is not how these preliminary schemas can be integrated with each other or turned into a schema for digital scholarly editions per se. The question is rather one of a higher level of abstraction: that of the structures within which we might embed such structures designed specifically for certain types of records suited for certain types of cultural transmission and expression.

F.
SUPERSTRUCTURES

The term 'superstructure' has, informally, conversationally, communally, haunted the discourse surrounding digital scholarly editions for some time, but it has haunted it like a ghost would – leaving no discernible footprint in the research literature.[140] Interestingly enough, we can encounter the term in definitions of Lotman's *modelling systems*:

> For Lotman, [modelling systems are] semiotic structures which can be regarded as languages insofar as they have basic units combinable by rules and an analogical relation to what they represent. He sees spoken language as a **primary modelling system**

203–235. He, too, mentions Heidegger, ibid., 206f. without contextualizing his stance on technology (this also applies to his mention of Karl Jaspers in conjunction with Heidegger, Smithies 2017, 208, as if these philosophers could be named alongside each other without awareness of their fraught relationship and diverging philosophies, especially given the historical implications; Richard Wisser has discussed the issue of speaking of Jaspers 'and' Heidegger, see Richard Wisser, "Jaspers und Heidegger: Eine Aufgabenstellung in Form eines Problemaufrisses," in: *Karl Jaspers, Philosopher among Philosophers / Philosoph unter Philosophen*, ed. by Richard Wisser and Leonard H. Ehrlich, Würzburg: Königshausen & Neumann / Amsterdam: Rodopi, 1993, 153–162).

140 I owe my introduction to the term in the context of digital scholarly editing to Patrick Sahle and can date that conversation specifically to 12 December 2013.

> and writing as a **secondary modelling system** (a semiotic superstructure) which is built upon it.[141]

This understanding of a 'superstructure' as being built upon another structure aligns with the common definition.[142] Outside of digital scholarly editing, the term has a diverse history, employed in a context of Marxist philosophy[143] just as well as in architecture,[144] software engineering,[145] or Teun van Dijk's linguistic discourse analysis.[146] There, both superstructures and macrostructures denote a type of 'global structure' that, in the case of a superstructure, "is the schematic form that organizes the global meaning of a text."[147] In Teun van Dijk's concept, superstructures have "*functional categories*"[148] that are supplemented by "*rules* that specify which category may follow or combine with what other categories."[149] The main example given for a superstructure is that of a "*narrative*"[150] where the "narrative categories [...] are the functional slots for the 'content' of the discourse."[151]

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141 Daniel Chandler and Rod Munday, 'Modelling Systems,' in: *A Dictionary of Media and Communication*, Oxford [et al.]: Oxford University Press, 2011, online: <https://www.oxfordreference.com/view/10.1093/oi/authority.20110803100203225>.
142 Such as in the 'superstructure' entry in the *Cambridge Academic Content Dictionary*, Cambridge: Cambridge University Press, 2008, 959: "a structure built on top of something else, esp. the part of a building above the ground or the part of a ship above the main deck (= floor)."
143 See, for example, Antonio Gramsci's use of *struttura* and *superstruttura* / *sovrastruttura* / *soprastruttura* for Karl Marx' concept of *Basis* and *Überbau* to describe the societal relation between the economical means of production and the socio-cultural apparatus of state; cf. Alvaro Bianchi, *Gramsci's Laboratory: Philosophy, History and Politics*, Leiden [et al.]: Brill, 2019, 103–151.
144 See, for example, W. Eugene Kleinbauer, "'Aedita in turribus': The Superstructure of the Early Christian Church of S. Lorenzo in Milan," in: *Essays in Honor of Sumner McKnight Crosby*, ed. by Pamela Z. Blum, New York: Center, 1976, 1–9.
145 See Andy Evans [et al.], "A Unified Superstructure for UML," in: *Journal of Object Technology* 4/1 (2005), 165–181.
146 Teun A. van Dijk, *Macrostructures: An Interdisciplinary Study of Global Structures in Discourse, Interaction, and Cognition*, Hillsdale: Lawrence Erlbaum, 1980 [reprinted by London / New York: Routledge, 2019].
147 Van Dijk 1980, 108f.
148 Ibid., 109.
149 Van Dijk 1980, 109.
150 Ibid.
151 Van Dijk 1980, 116.

This is only a very brief recapitulation of how a concept of 'superstructures' may have been defined in past scholarship. More pertinent is the question why it has percolated through the province of digital scholarly editing, at least on some level in some local variations. That question cannot be answered with reference to existing statements. It will therefore be necessary to originate such statements here. In keeping with the discussion about the *observation* of a given phenomenon versus its *explanation*, it might be helpful to distinguish that point once again by citing Wolfgang Kemp who himself briefly referred to Lotman in his examination of medieval *picture systems*:

> There we may agree with Lotman. Every culture needs both: the subtext that says how everything is ordered and the subtext that says how everything became.[152]

Structures determine 'how everything is ordered', insofar as they are determined by us. The notion of a superstructure, as I have heard it mentioned with regard to digital scholarly editing, is meant to signal that there is a frame of reference for each, in the traditional diction, textual witness, i.e. that there is something beyond its singular existence; a frame of reference that expresses how each witness is merely an instantiation of an overarching *work* structure. This would seem to agree with the thoughts developed in this book: that the primary ways of establishing a contextualization of the respective source materials in want of scholarly editions are (1) to relate the ideational entity of the work to its frame of origin and reception, or: its place in the 'cosmos of culture' and (2) to relate the ideational manifestation of the work in material witnesses to each other in a frame of likeness and variance, or: their place in the 'cosmos of work'.

It does not, however, automatically follow from this that 'superstructure' is the most apt description of such a structural framework. Why not speak of a 'metastructure', for example? How

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152 Kemp 1989, 125, original: "Da ist Lotman zuzustimmen. Jede Kultur braucht beides: den Subtext, der sagt, wie alles geordnet ist, und den Subtext, der sagt, wie alles geworden ist."

does the 'superstructure' of or in an edition relate to its 'infrastructure' – or various types of 'infrastructures', for that matter? Why would we speak of *the* 'superstructure' instead of *a* 'superstructure'? How many 'superstructures' does a scholarly edition need, exactly, or rather, how many should be sensibly differentiated and maintained as related yet separate; conceptually, that is, as they might, on the technical side of things, be realized in a nested, inter-threaded, graph-based, tree-hierarchical, or whichever else imaginable entangled or disentangled form?

It would seem to me that there are four layers to this; that is to say, it would seem that there are four layers which we might want to define as focal points in our construction of a scholarly edition; which is not to say that these are the only possible focal points or that every edition has to take all of these layers into account.

If we recall the actions that a scholarly editor might engage in – collation, annotation, reconstruction, emendation, presentation –, then we should be aware that the structural constitution of an edition does not derive from these actions *ipso facto;* in fact, some of these actions may be *transverse* to the layers of structural constitution, insofar as they intervene in its construction at different points for different purposes, disturbing the model all the while they are contributing to it. The layers of structural constitution are layers of *relationality* pertaining to the *representation* of relationality.

Having said that, the first layer that we could identify in a modelling system of scholarly editions – which will be called the **primary layer** hereafter – would evidently seem to be the layer that we might have traditionally seen expressed in an *apparatus criticus*: The work-*internal* relation of witnesses to the work or otherwise delineated entity drawing the *boundary* around the purview of the edition. We will return to this for a more detailed discussion in a moment.

secondary layer. A second layer could be what would traditionally have been realized in both a *Similienapparat* and a *Testimonienapparat*: The relation of references *within* the work, viz. matters of quotation, of intertextuality or intermediality or the like, to the referenced material *outside* of the work or vice versa, meaning that this would be, in effect and in terms of where the relation is traced, a work-*external* relation.

tertiary layer. A third layer could be what would traditionally have been relegated to a *Sachkommentar*, a factual commentary concerned with clarifying and explicating information inherent in the work but not immediately obvious to a present-day observer: This would be the relation of units of meaning *within* the work to an explicit identification of said units (names, places, objects, and the like), meaning that it could involve the relation of these units to external controlled vocabularies, taxonomies, or ontologies while still servicing, fundamentally, a work-*internal* purpose concerned with uncovering 'what' the work contains in terms of 'information'.

quaternary layer. A fourth layer could rise to the level of Panofsky's iconological layer, if we take the tertiary layer to be similar to Panofsky's iconographic layer: It would involve relating the work or phenomena *within* the work to a broader work-*external* frame of cultural embeddedness in order to offer explanations as to 'why' the work contains certain information or why the transmission is variant in certain places or why it references other works and was referenced by other works. In keeping with the parallels drawn earlier, we could also think of this layer as being 'connotative' and the tertiary layer as being 'denotative' although such nomenclature might confuse distinctions.

When the question now arises whether these layers are superstructures or amount to a complex of superstructures or combine, indeed, to form one superstructure, then my instinct would be to answer this: We may speak of the first two layers as *super*-structures to emphasize that they themselves, as in the witnesses or the references within them, point to something *beyond* the respective witness or *beyond* the work as such; note that if we assign 'the work' (or 'the corpus' or whichever entity we want to create an edition of) to be the *boundary* of the edition, not in terms of what the edition references but in terms of what it fundamentally represents at its core, we will find superstructures to be both work-*internal* and work-*external* frames of reference. The last two layers, while also concerned with both work-*internal* and work-*external* information, should, perhaps, rather be thought of as *meta*-structures so as to emphasize that they are editorial annotations *about* the work in the sense that a mere comparison between different materials, a mere comparative autopsy, may be able to detect the structural constitution of

relationality with respect to the first two layers of inspection but could not, *sine sententia*, by itself establish the relationality expressed in layers three and four. Superstructures, in this view, are a depiction of an inherent structural *beyondness* emanating from the material itself[153] while metastructures are the *beyondness* – beyond what is explicitly there on the page, in the image, in the sound – that we ourselves craft onto or rather *into* the superstructures we cognitively (re)construct through collation; and possibly, in the future, through comprehensive computational methods.

To illustrate what I mean, it might be helpful to think of it as a more mathematically minded person would, although I lay no claim to actual mathematical soundness of expression:

Let us say that the superstructure of the work, as in, the frame of reference for the structural constitution of each work witness, is S. Let us furthermore say that the witness of a work is W. A formulaic expression might then be:

$S = \{W_1, W_2, ..., W_n\}$ (given that $n \in \mathbb{N}$)

This means, at the same time, that any witness W is a subset of the work superstructure; any element present in a witness – any partition that we undertake, any unit of meaning that we identify, not in terms of what it is but even merely *that* it is a distinct unit of meaning – *must* be part of S:

$W_i \subseteq S$ (given that $i = 1, 2, ..., n$)

In fact, nothing is part of S that is not part of a W. If there is only one W (or if all W are identical to each other, which we might, for this purpose, treat as one W, even if there are several physical manifestations of it), it follows that it is identical to S:

$W_1 = S$ (given that $i = n = 1$)

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153 This recalls George Kubler and his assertion that "structural forms can be sensed independently of meaning" (Kubler 1962/2008, 24). Such structures may arise from their role in the creation or communication of meaning but that does not mean that they do not constitute a phenomenon of their own.

It is possible to conceive of a scenario where we have more than one W, e.g. n = 2, the first of which contains all elements of S (and is therefore identical to it) whereas the second one contains only a subset of S. However, if n > 1, the probability increases that despite S containing all the elements present in any given W, any given W may not contain all elements present in S, meaning that in such a scenario, any given W would be a proper subset of S:

$W_i \subsetneq S$ (given that i = 1, 2, ..., n)

The superstructure of the work is therefore not an *ideal* type of work representation, it is the *maximal* type. Any discovery of further witnesses of a work would mean that any elements contained in that W but not in S at that point would have to be added to S while the absence of elements present in S but not in W would have no further effect on S or W. The work would be constructed through the *presence* of elements in all W. It is conceivable that one might want to derive an ideal type of the work from such a superstructure – that would not be the superstructure of the work anymore, however, as it would not be able to function as a frame of reference to any given W.

This understanding of the primary layer consciously recalls Paul Zumthor's *œuvre* definition.[154] The superstructure of the work is not a sum of parts, it is a set of parts.

When it comes to the secondary layer, reason dictates that the network of references that goes beyond the work superstructure and reaches into a superstructure or several superstructures of a semiospherical nature can be constructed around the notion of non-arbitrary 'slots for content' as well, although it should be noted that an editorial project may choose to forego this layer as integrating it into the information infrastructure (in the view where we have a formulation of one such infrastructure, i.e. a conceptual one) might be deemed beyond the scope of the editorial project or otherwise unfeasible; if there were an effort, however, to construct such a superstructure for a specific type of reference (e.g. a structural account of Ancient mythological *topoi* recycled

154 Cf. Zumthor 1972, 73.

and reworked in different works, within a certain scope), then it would consist of the manifestation of references in multiple work witnesses and different witnesses in different works would point at a superstructure that, same as a work superstructure, would be defined by the *presence* of manifested expressions and variations over the same anchor point.

One difference that we can note, or rather one difference that we must discuss based on the level of detailed observation and extraction of information that we want to perform for the core focus of an edition, is the matter of comparability. *How* do we know whether something is a variant of a certain designated point or *area* within a superstructure?

The answer to this will differ depending on the mediality of the observed object and it will also differ depending on the scale at which the superstructure is constructed; it would seem, for example, that texts, for all the collation tools and algorithms that exist, would benefit most from a superstructural approach on a higher level of semantic partitioning. With picture programmes in manuscripts, as already shown, we could divide the work superstructure into three sub-superstructures, with the variant transmission of content *in* the pictures being denoted by a variant semantic 'occupation' of a *space*. We might therefore create a *topographical* abstraction *through which* we would point at the digitized source material *as well as* at the corresponding superstructure element. One could question whether the topographical abstraction itself would not be part of the superstructure but as with the ideal type of a work representation, it could not be unless it were able to function as a point of reference for any given witness and for that to be possible, there would either need to be a way to create a topographical abstraction able to project *conflicts* of topographical manifestation in different witnesses or there would need to be alternative topographical abstractions wherever a conflict occurs (such as in a picture being realized in a mirrored form or any other way in which the relationality of elements identified in a picture on a more abstract level – e.g. element A being to the left of element B – is reverted or changed).

We might, therefore, say that a topographical abstraction *could* be part of a superstructure but that the superstructure, as a statement on structural forms of meaning, does not necessarily have to rely on a topographical abstraction to constitute itself and, furthermore, that a

topographical abstraction could be realized in addition to it just as well as it could be in conjunction with it.

The same applies to the type of diagrammatic visuals briefly previewed in **CHAPTER III**: We might create a *graphical* abstraction (consisting of circles, triangles, rectangles, and other geometric forms, connected by lines, dots, arrows, and so on) and we might point at the digitized source *through* this abstraction just as well as we might point at a superstructure projecting the hierarchy and order of the *meaning* expressed in such visuals and we might also integrate both but we should not confuse them. We might even point at a graphical abstraction (or a topographical abstraction, in the case from above) *in lieu of* pointing at the corresponding space in the digitized source but neither a graphical abstraction nor a topographical abstraction would be an adequate substitute for the representation of the source material, similar to a transcription not being an adequate substitute for the representation of a manuscript page either, at least not in every imaginable scenario and circumstance, although a textual notation – in comparison to a graphical or topographical abstraction – retains more information by virtue of its symbolic nature and may suffice for some purposes, especially when those purposes do *not* involve creating an adequate representation of the source material.

What is common to all of the superstructures discussed here is that they are not only inherently structures of comparison but also structures of *sequentiality*. This is most obvious when it comes to film works and other time-based media, but it also applies to any other kind of work, so long as there is more than one unit of meaning, insofar as we identify it, and so long as there is an order of elements, which is inevitable insofar as an observer cannot perceive and process all units of meaning at once. Here, the work superstructure (or its division of sub-superstructures) must again contend with a plurality of possibilities: In an ideal type of work representation, we can determine the order of elements as they would most often occur; in a maximal type of work representation, we must include all orders of elements as manifested in work witnesses, sans the absence of an element. That means that a superstructure that is supposed to capture more than the mere existence of elements must contain

one sequence or a series of sequences denoting the order and relationship in which these elements may occur.[155]

When we now turn to the tertiary and quaternary layers, we have to keep in mind that as far as editorial *activities* or the implementation of these conceptualizations in a project are concerned, these metastructures may not necessarily be expressed as separate from a work superstructure or wider network of references, for the simple reason that the tertiary layer, which we may also call the *identification of information*, and the quaternary layer, which we may also call the *explanation of information*, hermeneutically precondition us in our construction of any superstructure that consists of units of *meaning*, even if we do not treat the structural constitution of such a superstructure as identical to its semantic *Ausformung* ('taking-shape') or rather our making-explicit of it. The layers, as numbered above, are not ordered chronologically nor by the import of their objective.

If we do, then, decide to explicitly identify certain information and perhaps even to interlink it with other available 'data', we enter the territory of *ontological commitment* mentioned in **CHAPTER II**. This com-

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155 As far as the specific nature of a given medium and witness is concerned, we could, of course, turn to existing schemata of description to detail types, features, or technicalities, be it Iconclass for picture works or something like the AdA filmontology for films (for the latter, see Jan-Hendrik Bakels [et al.], "AdA Filmontology – a machine-readable Film Analysis Vocabulary for Video Annotation," paper at the *Digital Humanities Conference 2020*, Ottawa, Canada, 22–24 July 2020, abstract: <https://dh2020.adho.org/wp-content/uploads/2020/07/488_AdAFilmontologyamachinereadableFilmAnalysisVocabularyforVideoAnnotation.html> (accessed 25 September 2023) and <https://projectada.github.io/ontology/> (accessed 25 September 2023)). Another example to mention in a digital humanities context would be the work by Adelheid Heftberger who summarized past efforts to visualize 'formal' features and structures of film before showcasing an approach originating in the *Digital Formalism* project that manually annotated such features in the work of filmmaker Dziga Vertov (1896–1954); see Adelheid Heftberger, *Kollision der Kader: Dziga Vertovs Filme, die Visualisierung ihrer Strukturen und die Digital Humanities* (Film-Erbe; vol. 2), München: edition text+kritik, 2016 [published in English translation as Adelheid Heftberger, *Digital Humanities and Film Studies: Visualising Dziga Vertov's Work*, Cham: Springer Nature, 2019]. For information on the project, see furthermore Klemens Gruber and Barbara Wurm (Eds.), *Digital Formalism: Die kalkulierten Bilder des Dziga Vertov* (Maske und Kothurn; vol. 55/3), Wien: Böhlau, 2009. Features included the length of a shot, the composition or type of a shot, and the movement of the camera, i.e. types of motion. The annotation of the films was accomplished with a software called Anvil, cf. Heftberger 2019, 31.

mitment is always one of *vocabulary*. In that sense, it is one of verbal or textual description. It is imaginable that the primary and secondary layer, that is to say, the layers of comparative superstructural referencing, could be recorded *merely* by referencing units in the source material through the use of space and time, even though such an implementation might be unlikely. It is not, however, quite as imaginable that an explicit identification of information or an explicit explanation of information could be realized without the use of verbal or textual *communication* of information. It might be possible to design a system of sounds and colours to indicate certain information in certain places or at certain times, but that system would be limited in the amount of information it could reasonably convey and would, in itself, have to be explained in verbal or textual form. Perchance such a system could, however, increase the accessibility of information if combined with other considerations in that regard.

Rather than veer in the direction of implementation, we should emphasize the following aspects for the purposes of the present inquiry:

(1) A reconceptualization is not a reinvention. It is a reframing, a rethinking, a recognition of the conditions of realization.

(2) A reconceptualization of editorial theory in a computational context must be, not exclusively but first and foremost, an act of modelling which is to say, it must be an act of *structuring* layers of information *conceptually*.

(3) At the stage of realization, the structuring of information in digital scholarly editions must take the medial and information-theoretical environment into account that makes them *distinct* from printed editions. These may be subject to technological change. What does not change are the layers of information editors have *traditionally* sought to convey in a scholarly edition and layers of information we may *now* seek to convey. What has already changed are the *points of reference* through which we may realize *modes of representation*.

(4) Modes of representation concerned with 'continuous' (or rather non-notational) information must take the *facsimilized* digital reproduction and thereby representation of said information into account. It exists. It can be pointed at. It does, in itself, represent crucial information.

It is not an accessory; it is the *core* of any scholarly edition that is not premised on a *transcription* of conventional signs.

(5) A *Leitprinzip* of editorial theory, which is to say, a principle centred around the selection of a guiding *witness* of a work or otherwise defined subject of edition, cannot represent the *variation* of transmission, it can only represent an *idealized* or otherwise editorially *authenticated* subject of edition and subsequently a *dependency* of variation on said idealization or authentication.

(6) If we are to avoid *creating* such dependencies in our recording of transmission variance, we have to record units of meaning or otherwise partitioned units in the work *witnesses* that we can *relate* to a maximal type of work representation.

(7) That maximal type of work representation must be able to represent *all* work instantiations insofar as something is deemed to be an instantiation of a work or otherwise defined subject of edition.

(8) Therefore, it has to be able to represent *multiple* and even *conflicting* structural manifestations of a work, i.e. different orders of elements in a *sequence*, different orders of elements in a spatial *topography*, different *semantic* manifestations of elements, different *graphical* appearances of elements. We may, for this reason, also think of maximal structures as *groups* of structures.

(9) Recordings of units of meaning or otherwise partitioned units in the witnesses – which are *not* in themselves recordings of *variation* – can be related to each other by referencing the same anchor points in the maximal structures. By *relating* them to each other we may *recognize* and *visualize* congruencies and incongruencies, i.e. variation. (It should be noted that a certain *a priori* recognition of variation *necessarily* flows into our construction of maximal structures since those do not construct themselves, although – and this is something we should not rule out – they may come to construct themselves or, formulated differently, we may come to *automate* their construction on the basis of information we record in the witnesses. At this point, it is not clear how that would be achieved, but that is only because we did not make this question part of our inquiry.)

(10) Only by *knowing* what types of variation there are, even without understanding *why* that variation exists as it does, may we be able to

formulate *structural* manifestations of variation. Subjects of editions are always *specific* in their needs and requirements, but the global study of their *genre* or *medium* or in any way related manifestation of ideational, intellectual, and artistic, if we want to use that word, creations of the human mind can help us realize what *points of reference* we should be paying attention to in our comparison of instantiations and, more importantly so, in our comparison of evidence and information that goes *beyond* the subject of the edition into a dimension of *context*. That context, or pertinent parts of that context, can be recorded and related to the subject of the edition *within* the edition as well and, in the case of editions with a strong *reconstructive* component, *must* do so.

Given that models are said to be visualizable, there might be an expectation that this discussion should close with a visualization of the layers proposed above. This brings us to our last point, namely the argument that a need for *visualizing* a model may inadvertently *simplify* it to the point of inaccuracy. I will illustrate this in words with what I will call the *paper metaphor:*

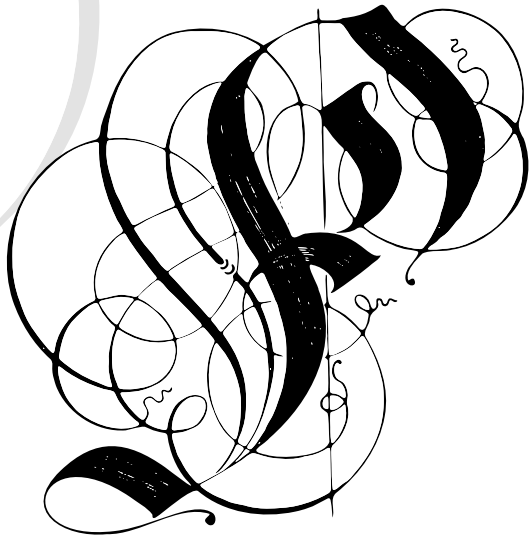
In graphics, four layers will often be visualized in a form similar to four sheets of paper stacked over each other. What I envision, however, is not a stack of layers. Even though we may have four sheets of paper, meaning four different *planes* of information – and this should not be understood in a strictly mathematical, i.e. geometrical, sense of the word *plane* –, those planes do not have to be *parallel* to each other. In a tactile understanding, we can cut out shapes in a sheet of paper, we can fold it, we can tear a sheet of paper apart and fold several of them into each other or put one part of a sheet through a gap in the other, we can create all kinds of *intersections* and *constructs* and *entanglements* and this notion of *crafting*, of *tinkering*, points us towards the origin of *modelling* as a form of *handiwork*. What is important here is that there will always have been *four separate sheets of paper* to begin with and it *is* important to know what planes of information we may differentiate on a *Vorbild* level in order to know what we will be making our *Abbild* model of a concrete information *recording* and *interrelation* out of – but that concrete model and the ways in which its different planes of information *intersect* or are *nested* or *inter-threaded* will depend on the chosen technologies, conventions of expression, and many more factors, and someone else

making an *Abbild* model of a subject with the exact same *planes* of information but other ways of *stacking* them or *crumbling* them or ripping *into* them will end up with an entirely different concrete model, or, if we stay with the paper metaphor, an entirely different paper *figure*.

It is for this reason that visualizing the model as proposed in this chapter cannot serve any purpose as is. The layers I have delineated are not stacked or positioned in any relation to each other per se. They are like four sheets of paper, lying on a table, lying on a table in an arbitrary order and position, waiting to be taken into a hand and *changed*, *moulded*, *worked into each other* to become a *representation* of actual *information* and actual information *relations*.

If we are to create 'knowledge sites' – and that term implies a claim to a certain *level* of representation that we should be cautious of –, then we must become aware of *structures* in our objects of study; not because those structures necessarily help us *understand* our objects of study (although they might, incidentally, do that as well) or because we believe those structures to be *inherent* by nature, but because we have to structure *our view of* the objects and our view of the *boundaries* of an object, of an *entity* or *group* of entities. To model means to *shape* but it also means to *structure* and we do not need to do either as our primary conduct of scholarship, but *if* we assume that modelling is at the centre of the digital humanities (which it may very well *not* be and respective arguments should be heard from those who would advance them), then we need to understand that it *means* to shape and to structure and we need to understand how these differ and we may also need to acknowledge that the digital humanities *are* tied to a type of neo-structuralism that is not so much related to former movements of structuralism (although it might be that, as well) but rather rooted in a fundamental dependence of any computing system on *structures* of expression and understanding.

As for scholarly editions, we may, in summation, call the most important structure, insofar as a structure or a group of structures of the *subject* of edition is concerned, the *superstructure*.



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that is fair to say. Back in the day, I was still a student, assisting Franz Fischer with the management of the project, but being able to attend all the events and meeting all the supervisors and fellows was a huge privilege with a truly profound impact on my trajectory. Elena Pierazzo, Peter Stokes, James Cummings, Peter Boots, Mats Dahlström, Dirk van Hulle, Georg Vogeler, Susan Schreibman, Marjorie Burghart, Fabio Ciotti, Arianna Ciula, Patrick Sahle – I hope I'm not forgetting anyone. Has there ever been a more illustrious group of scholars from digital scholarly editing assembled? Not in a European context. And then the next generation, Frederike Neuber, Merisa Martinez, Aodhán Kelly, Elli Bleeker, Richard Hadden, Elena Spadini, Tuomo Toljamo, Francisco Javier Álvarez Carbajal, Anna-Maria Sichani, Misha Broughton, Daniel Powell, Federico Caria, Wout Dillen, Roman Bleier, Magdalena Turska, Linda Spinazzè, Gioele Barabucci… thanks to each and every one of you. All those who have supported me over the years. Hannah Busch, Kalina Petrova, Sina Blum, Laura Schweitzer, Mel, Chey, Irit…

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To Ianto, my sister's family dog, the best lab in the world, whom I could not hug one last time because it was March 2020 and there was a pandemic and when the vet assistants came, we had to keep our distance. Sometimes I still think you will come through the door. Farewell, sweet boy.

list of figures

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IMPRINT

Bruckmann, Friedrich, (possibly) after a drawing by August von Kreling. *Faust and Mephistoles gazing at a vision of Gretchen, from Goethe's Faust Part I*, albumen print, c. 1877. Rijksmuseum, Amsterdam, RP-F-2001-7-1530-12, online: <https://www.rijksmuseum.nl/en/collection/RP-F-2001-7-1530-12> (PD).

LETTERED ORNAMENTS

Franck, Paul. *Kunstrichtige Schreibart: Allerhand Versalien oder Anfangsbuchstaben der Teütschen, Lateinischen und Italianischen Schrifften aus unterschiedlichen Meistern der Edlen Schreibkunst zusammen getragen*. Nürnberg: Paul Fürst, 1655, online: <https://archive.org/details/kunstrichtigesch00fran/> (PD).

CHAPTER OPENERS

I Depiction of scientists (caption: "Die Heroen der Naturwissenschaft, aus Kaulbach's Wandgemälde: ‚das Zeitalter der Reformation'"); from *Die Gartenlaube* (1863), 53, online: <https://commons.wikimedia.org/wiki/File:Die_Gartenlaube_(1863)_053.jpg> (Wikimedia Commons, PD).

II Kepler, Johannes. *Prodromus dissertationum cosmographicarum, continens mysterium cosmographicum, de admirabili proportione orbium coelestium, deque causis coelorum numeri*, [...]. Tubingae: Georgius Gruppenbachius, 1596. ETH-Bibliothek Zürich, Rar 1367: 1, 24–25, online: <https://doi.org/10.3931/e-rara-445> (PD).

III Stock image, credit: Christian Horz / stock.adobe.com / no. 207377379.

IV St. Gallen, Kantonsbibliothek, Vadianische Sammlung, VadSlg Ms. 342, f. 1–5 – Vaticinia de pontificibus (Papstvatizinien), online: <http://www.e-codices.unifr.ch/de/vad/0342/>, CC BY-NC 4.0.

V Universal Pictures programme announcement in *The Film Daily* LII/65 (16 June 1930), 7–36, online: <https://archive.org/details/filmdailyvolume55354newy/> (courtesy of the Media History Digital Library).

VI 3D render by Lorem (@atulvi), <https://unsplash.com/de/fotos/5D6iogbblho> (Unsplash license).

FIGURES

FIG. 1 An example for a stemma in textual criticism; from Bernhard Schmeidler (Ed.), *Hamburgische Kirchengeschichte: Magistri Adam Bremensis Gesta Hammaburgensis Ecclesiae Pontificum*, Hannover / Leipzig: Hahn, 31917, XXXIV, online: <https://mdz-nbn-resolving.de/urn:nbn:de:bvb:12-bsb00000756-9> (Bayerische Staatsbibliothek, CC BY-NC-SA 4.0).

FIG. 2 Detail from *De tuin der lusten* by Jheronimus Bosch (c. 1490–1500), Museo del Prado, Madrid, <https://commons.wikimedia.org/wiki/File:The_Garden_of_earthly_delights.jpg> (Wikimedia Commons, PD).

FIG. 3 Typological schema from the *Biblia pauperum* picture cycle, c. 1480–1485; from Xylo-5, Bibliothèque nationale de France, Paris, <https://gallica.bnf.fr/ark:/12148/bpt6k850504w/> (PD) [first schema, unpaginated].

FIG. 4 Typological schema from the *Biblia pauperum* picture cycle, c. 1480–1485; from the facsimile reprint of the xylographic BNF Paris

Xylo-5 by Paul Heitz and Wilhelm Ludwig Schreiber (Eds.), *Biblia pauperum: Nach dem einzigen Exemplare in 50 Darstellungen (früher in Wolfenbüttel, jetzt in der Bibliothèque nationale). Mit einer Einleitung über die Entstehung und Entwicklung der Biblia pauperum unter besonderer Berücksichtigung der uns erhaltenen Handschriften von W. L. Schreiber*, Strasbourg: Heitz, 1903 [first schema, unpaginated].

FIG. 5 Example of a facsimile of book binding; from Bernard Quaritch (Ed.), *A Collection of Facsimiles from Examples of Historic or Artistic Book-Binding, Illustrating the History of Binding as a Branch of the Decorative Arts*, London: Quaritch, 1889, plate 100, online: <https://archive.org/details/collectionoffacs01quar/>.

FIG. 6 Saint Erhard in a manuscript of the *Elsässische Legenda aurea* from Lauber's workshop, c. 1435–1444; from 2° Cod 158, Staats- und Stadtbibliothek, Augsburg, f. 89r, <https://nbn-resolving.org/urn:nbn:de:bvb:37-dtl-0000000249> (CC BY-NC-SA 4.0).

FIG. 7 Saint Erhard in a manuscript of the *Elsässische Legenda aurea* from Lauber's workshop, c. 1434–1440; from Ms. germ. fol. 495, Staatsbibliothek zu Berlin – Preußischer Kulturbesitz, Berlin, f. 59r, <http://resolver.staatsbibliothek-berlin.de/SBB000059A700000000> (PD).

FIG. 8 V. A. Štoff's classification of scientific model types ("wissenschaftliche Erkenntnismodelle"), recreated in English here on the basis of its German translation; from V. A. Štoff, *Modellierung und Philosophie, transl. by Siegfried Wollgast*, Berlin: Akademie-Verlag, 1969, 48, online: <https://doi.org/10.1515/9783112645406>.

FIG. 9 Example of a text-image connection in the *Faustedition* (1.2 RC), Ms. germ. qu. 527, Staatsbibliothek zu Berlin – PK, f. 1v, where the synoptic view of the 'facsimile' and 'documentary transcription' allows for a mouseover effect on the image that highlights the corresponding text line, <http://www.faustedition.net/document?sigil=1_H.14&page=8&view=facsimile_document> (screen capture 29 June 2020).

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FIG. 11 RPLVIZ, the first visualization experiment for *Mapping the Republic of Letters*, built by Jeff Heer's students in CS448b, Humanities + Design Research Lab, Center for Spatial and Textual Analysis (CESTA), Stanford University, 2009, <http://stanford.edu/group/toolingup/rplviz/rplviz.swf> (screen capture 3 July 2020).

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FIG. 14 Depiction of Domitian persecuting Christians and Jews as one of the four horsemen of the apocalypse in Alexander Minorita's *Expositio in Apocalypsim* in Cambridge University Library, MS Mm.5.31, c. 1270–1290, f. 27v, <https://cudl.lib.cam.ac.uk/view/MS-MM-00005-00031/58> (CC BY-NC 3.0).

FIG. 15 Detail from vaticinium VII of the *Ascende calve* prophecies, showing pope Benedict XI feeding a serpent with a crow behind him, c. 1360/1370; from VadSlg Ms. 342, Kantonsbibliothek, Vadianische Sammlung, St. Gallen, f. 7, <http://www.e-codices.ch/de/vad/0342/7> (CC BY-NC 4.0).

FIG. 16 Detail from vaticinium VII of the *Ascende calve* prophecies, showing pope Benedict XI with a serpent and a dove appearing behind him, c. 1410/1415; from CC Cim. 6, Stiftsbibliothek Kremsmünster, f. 4r (image courtesy of the Stiftsbibliothek Kremsmünster).

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FIG. 19 Detail from vaticinium II of the *Genus nequam* series; from Osiander 1527, VD16 W 4645, Bayerische Staatsbibliothek, München, f. 11r, <https://mdz-nbn-resolving.de/urn:nbn:de:bvb:12-bsb00053611-6> (CC BY-NC-SA 4.0).

FIG. 20 Detail from vaticinium II of the *Genus nequam* series; from Osiander 1527, VD16 W 4644, Bayerische Staatsbibliothek, München, f. 11r, <https://mdz-nbn-resolving.de/urn:nbn:de:bvb:12-bsb00026119-8> (CC BY-NC-SA 4.0).

FIG. 21 Detail from vaticinium II of the *Genus nequam* series; from Osiander 1527, VD16 W 4642, Taylor Institution Library, Bodleian Libraries, University of Oxford, f. c3r, <https://editions.mml.ox.ac.uk/editions/weyssagung/#c3r> (CC BY-NC-ND 4.0); the digital presentation of this print was created by Huber Digital for Taylor Editions at the University of Oxford and published in 2015, with the transcription encoded in TEI/XML by Kezia Fender.

FIG. 22 Table with characteristics of *Vaticinia* versions; from Hélène Millet, *Les successeurs du pape aux ours: Histoire d'un livre prophétique médiéval illustré (Vaticinia de summis pontificibus)*, Turnhout: Brepols, 2004, 120f.

FIG. 23 Bifolium from a disassembled *Beatus* manuscript, showing the genealogy of Christ, c. 1180; from the Metropolitan Museum of Art, New York, 1991.232.2a-d, <https://www.metmuseum.org/art/collection/search/466197> (PD).

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FIG. 26 A study in manual serial reproduction of images; from Frederic Barlett, *Remembering: A Study in Experimental and Social Psychology*, Cambridge: Cambridge University Press, 1967, 180f. [originally published in 1932].

FIG. 27 The dream of Astyages in the *Speculum humanae salvationis*, 15th century; from Latin 512, Bibliothèque nationale de France, Paris, f. 4v, <https://gallica.bnf.fr/ark:/12148/btv1b60002575> (PD).

FIG. 28 The dream of Astyages in the *Speculum humanae salvationis*, 15th century; from Hs II 10, Stadtbibliothek Mainz, f. 3r, <https://nbn-resolving.org/urn:nbn:de:0128-3-2330> (CC BY-NC-SA 3.0).

FIG. 29 An abstract visualization of the variation that might occur on the witness level, e.g. the omission and reordering of components.

FIG. 30 An abstract visualization of the 'work' as a maximal type of tradition, containing all components from all witnesses.

FIG. 31 Some examples for page layouts of *Speculum humanae salvationis* manuscripts: text above a picture, two texts with two pictures interspersed, two pictures above each other, two texts underneath two pictures (text highlighted in yellow, the picture of the story of Balaam highlighted in blue and the picture of the story of the sealed fountain highlighted in red); from top left to bottom right Hs. 179, Universitätsbibliothek Freiburg, f. 3r, <http://dl.ub.uni-freiburg.de/diglit/speculum1436/0007> (PD); Cod. Pal. germ. 432, Universitätsbibliothek Heidelberg, f. 6v, <https://doi.org/10.11588/diglit.230#0020> (PD); 3378, Badische Landesbibliothek Karlsruhe, p. 5, <https://nbn-resolving.org/urn:nbn:de:bsz:31-1732> (CC BY 4.0); Hs II 10, Stadtbibliothek Mainz, f. 3v, <https://nbn-resolving.org/urn:nbn:de:0128-3-2330> (CC BY-NC-SA 3.0).

FIG. 32 Visualization of the layouts from **FIG. 31** overlayed with respect to the page dimensions, indicating the kind of structures that might emerge if this was done on a more comprehensive scale, considering that the work survives in several hundred manuscripts.

FIG. 33 Vaticinium I from the *Ascende calve* prophecies with highlighted (corresponding and diverging) elements; from VadSlg Ms. 342, Kantonsbibliothek, Vadianische Sammlung, St. Gallen, f. 1, <http://www.e-codices.ch/de/vad/0342/1> (CC BY-NC 4.0), and Ms. 68, Bibliothèque municipale, Châlons-en-Champagne, f. 61v, <https://portail.biblissima.fr/ark:/43093/ifdata75fb810cd375c252b0869f32d1f3be0794c60446> (CC BY-NC 3.0).

FIG. 34 Visualization of the mark-up from **FIG. 33** overlayed; in addition to the two manuscripts from the previous figure, this visualiza-

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FIG. 35 Beginning of a schema for the recording of editorially relevant transmission variance beyond text.

FIG. 36 Intertitle from *Das Cabinet des Dr. Caligari* (1920), dir. by Robert Wiene, expressing the terror of the character Francis upon learning of a murder; screen capture, Blu-ray: Eureka (Masters of Cinema; 92), 2014, time stamp 0:29:30 [restored by the Friedrich-Wilhelm-Murnau-Stiftung].

FIG. 37 Intertitle from *Faust – eine deutsche Volkssage* (1926), dir. by F. W. Murnau, narrating Faust's ordeal and prayer to find a cure for pestilence; screen capture, Blu-ray: Eureka (Masters of Cinema; 78), 2014, time stamp 0:08:24 (domestic version) [restored by the Friedrich-Wilhelm-Murnau-Stiftung].

FIG. 38 Details of Carl Spitzweg's variant *Der arme Poet*; from top to bottom: *Study for The Poor Poet*, oil on paper on cardboard, c. 1837, Grohmann Museum, Milwaukee, <https://artsandculture.google.com/asset/study-for-the-poor-poet-carl-spitzweg/GQGQjsKORrNd_g> (PD), *The Poor Poet*, oil on canvas, c. 1837, Grohmann Museum, Milwaukee, <https://artsandculture.google.com/asset/the-poor-poet-carl-spitzweg/PgG8I0sLj0WS1A> (PD), and *Der arme Poet*, oil on canvas, 1839, Bayerische Staatsgemäldesammlungen – Neue Pinakothek München, <https://www.sammlung.pinakothek.de/de/artwork/9pL3KbKLeb> (CC BY-SA 4.0).

FIG. 39 Demonstration of the 'yellow milkmaid syndrome' with details of Johannes Vermeer's *Het Melkmeisje*, c. 1660, SK-A-2344, Rijksmuseum, Amsterdam; on the left is the 'true' version provided by the Rijksmuseum, <http://hdl.handle.net/10934/RM0001.COLLECT.6417> (PD), on the right one of the many versions with low quality and low colour fidelity (here apparently sourced from a CD-ROM publication, <https://commons.wikimedia.org/wiki/File:Kuchenmagd_-_Jan_Vermeer_van_

Delft.png> (Wikimedia Commons, PD)) that dominated online search results before the Rijksmuseum provided their own digitization for the public domain.

FIG. 40 Photograph of Nazis plundering Dr. Magnus Hirschfeld's institute, Berlin, 6 May 1933 (Manfred Baumgardt, Berlin); from the United States Holocaust Memorial Museum, courtesy of National Archives and Records Administration, College Park, <https://collections.ushmm.org/search/catalog/pa26351> (PD).

FIG. 41 Photograph of the book burning by the Nazis on the Opernplatz in Berlin, 10 May 1933; many items from Hirschfeld's institute were destroyed and a broken bust of Hirschfeld himself paraded at the event; from United States Holocaust Memorial Museum, courtesy of National Archives and Records Administration, College Park, <https://collections.ushmm.org/search/catalog/pa26367> (PD).

FIG. 42 Detail from the navigation model of the 2006 study edition of Metropolis (1927), dir. by Fritz Lang; from Anna Bohn and Enno Patalas (Eds.), *DVD Metropolis Study Edition*, booklet, Berlin: Universität der Künste Berlin, Institut für zeitbasierte Medien, 2006, 18 (for the full figure, see 18–19).

FIG. 43 Comparison of the domestic and export versions of *Faust – eine deutsche Volkssage* (1926), ed. by Bradley Richards, prod. by Nick Wrigley, written and dir. by R. Dixon Smith; screen capture, Blu-ray: Eureka (Masters of Cinema; 78), 2014, time stamp 0:24:14 (bonus feature).

FIG. 44 Article about multi-language film "Versions" from *Filmwelt* 5 (1934), 9–10 (photographer(s) and author could not be identified; image courtesy of the *Theaterwissenschaftliche Sammlung*, University of Cologne).

FIG. 45 Textual annotation / introduction of a scene in the comparison of the domestic and export versions of *Faust – eine deutsche Volkssage* (1926), ed. by Bradley Richards, prod. by Nick Wrigley, written and dir. by R. Dixon Smith; screen capture, Blu-ray: Eureka (Masters of Cinema; 78), 2014, time stamp 0:17:22 (bonus feature).

FIG. 46 Every second frame of a brief sequence from *Hallo, du süße Frau* in *Die Drei von der Tankstelle* (1930), starring Lilian Harvey and Oskar Karlweis; screen capture, DVD: Friedrich-Wilhelm-Murnau-Stiftung /

Universum Film [Collection *Die große Heinz Rühmann-Box*], 2018, 25 fps, time stamp 0:25:15–0:25:16.

FIG. 47 Every second frame of a brief sequence (corresponding to the exact same part, musically, in **FIG. 46**) from *Hallo, du süße Frau* in *Le chemin du paradis* (1930), starring Lilian Harvey and Henri Garat; screen capture, DVD: René Chateau Vidéo, 2016, 25 fps, time stamp 0:30:34–0:30:35 [* aspect ratio unchanged, the image appears cropped at the bottom in this release].

FIG. 48 Comparison of national costuming choices, above *Die Drei von der Tankstelle* (1930), where the customer wears a hat with a gamsbart, below *Le chemin du paradis* (1930), where the customer wears a bowler. Other differences include the stiff high collar in the German version where the man also wears pince-nez glasses attached to a ribbon, as well as the demeanour of the characters – the customer in the German version loses his hat twice in the course of the scene; screen capture above, DVD: Friedrich-Wilhelm-Murnau-Stiftung / Universum Film, 2018, time stamp 0:14:32, and below, DVD: René Chateau Vidéo, 2016, time stamp 0:14:39.

FIG. 49 Visual comparison of the short film (2013) and feature film (2014) versions of *Whiplash*, dir. by Damien Chazelle; screen capture, Blu-ray: Sony Home Entertainment, 2020, above time stamp 0:13:37 (bonus feature, original short film), below time stamp 0:27:09 (feature film).

FIG. 50 Beginning of a schema for the recording of interpretation layers within the framework of a scholarly edition beyond text.

FIG. 51 Example of an editorial decision tree.

bibliography

This bibliography contains the references made within the book, divided into cultural references, online resources, and research literature, each with several subsections. Cultural references do not include any and all such references, of course; only those that could and should be explicitly sourced. They indicate older (some might say 'historical') and literary publications, heritage such as manuscripts, early prints, and fine arts, as well as a list of film works. Online resources refer to websites of institutions, initiatives, and ontologies, tools, software, and solutions, digital editions, archives, and projects, presentations, blog posts, and white papers, news, editorials, and interviews, as well as videos and recordings. Research literature encompasses entries of encyclopaediae and catalogues, articles and essays in journals and books, contributions to books such as introductory chapters, as well as full monographs and volumes.

Multiple listings for one author are indicated with an em dash and an indent; ordered chronologically based on first publication. Variant editions of a work are indicated with an angle, indent, and reduced font size. Work versions or complexes are linked with brackets; in those cases, the alphabetical listing of the first interlinked item applies.

a. cultural references

Cultural References
'HISTORICAL' AND LITERARY PUBLICATIONS

[s.n.]. *Codex argenteus Upsaliensis: Jussu Senatus Universitatis phototypice editus*. Upsaliæ: Societas Malmö ljustrycksanstalt, 1927. University Library Uppsala, Sv. Biblar. Got. fol, online: <https://nbn-resolving.org/urn:nbn:se:alvin:portal:record-173610>.

[s.n.]. *Der Episcopat der Gegenwart in Lebensbildern dargestellt: Dr. Anton Ludwig Frind, Bischof von Leitmeritz († 28. Oktober 1881)*. Würzburg / Wien: Leo Wörl, 1883.

[s.n.]. "Holzschneidekunst: Ueber die sogenannte Biblia pauperum." In: *Morgenblatt für gebildete Stände* 14 (1830), 53f., and 15, 57–59.

[s.n.]. *Illustrations of the Textile Manufacturers of India*. London: Science and Art Department of the Committee of Council on Education, South Kensington Museum, 1881, online: <https://archive.org/details/CAI1057660001Images/>.

Barmby, James. *Gregory the Great* (The Fathers for English Readers). London: Society for Promoting Christian Knowledge, 1879.

Baumeister, Engelbert, and Paul Heitz (Eds.). *Einblattdrucke des fünfzehnten Jahrhunderts (40): Formschnitte des fünfzehnten Jahrhunderts in den Sammlungen des Fürstlichen Hauses Oettingen-Wallerstein zu Maihingen*. Strasbourg: Heitz, 1913, online: <https://doi.org/10.11588/diglit.50934#0077>.

Catullus, Gaius Valerius. *Q. Valerii Catulli Veronensis liber*, ed. by Karl Lachmann. Berlin: G. Reimer, 1829.

Droysen, Johann Gustav. *Grundriss der Historik*. Leipzig: Veit, 1868, online: <https://www.deutschestextarchiv.de/droysen_historik_1868> (accessed 11 February 2023).

Eike von Repgow. *Sachsenspiegel*, ed. by Claudius von Schwerin. Stuttgart: Reclam, 1953.

Engelhardt, C. M. (Ed.). *Herrad von Landsperg [...] und ihr Werk, Hortus deliciarum: Ein Beytrag zur Geschichte der Wissenschaften, Literatur, Kunst, Kleidung, Waffen und Sitten des Mittelalters*. Stuttgart [et al.]: Cotta, 1818, <http://catalogue.bnf.fr/ark:/12148/cb419048381>.

Goethe, Johann Wolfgang von. *Faust: A Tragedy*, transl. by Bayard Taylor. London [et al.]: Ward, Lock & Co., [3]1890.

—. Briefe: Historisch-kritische Ausgabe. 23. Mai 1764–30. Dezember 1772, ed. by Elke Richter and Georg Kurscheidt. Berlin: Akademie-Verlag, 2008.

Griggs, William (Ed.). *Shakspere's Hamlet: The Second Quarto, 1603. A Facsimile in Photo-Lithography by William Griggs, for 13 Years Photo-Lithographer to the India Office; with Forewords by Frederick J. Furnivall, M. A., Founder and Director of the New Shakspere Society, etc.* London: William Griggs, 1880.

Grimm, Jacob. "Über den Werth der ungenauen Wissenschaften." In: *Texte zur Theorie der Geisteswissenschaften*, ed. by Athena Panteos and Tim Rojek, Stuttgart: Reclam, 2016, 58–63 [reprint of *Kleinere Schriften VII: Recensionen und vermischte Aufsätze*, Hildesheim [et al.]: Olms, 1966, 563–566 [in itself reprint of Berlin 1884]; originally speech held in Frankfurt, 1846].

—. "Rede auf Lachmann." In: Kleinere Schriften (vol. 1: Reden und Abhandlungen), ed. by Karl Müllenhoff. Berlin: Dümmler, 1864, 145–162 [originally printed in Abhandlungen der Königlichen Akademie der Wissenschaften zu Berlin. Aus dem Jahre 1851, Berlin: Druckerei der Königlichen Akademie der Wissenschaften, 1852, I–XVI].

Gundling, Nicolaus Hieronymus. *Rechtliches und Vernunfft-mässiges Bedencken eines Icti, der unpartheyisch ist, von dem schändlichen Nachdruck andern gehöriger Bücher*. [Sine loco], 1726.

Heitz, Paul, and Wilhelm Ludwig Schreiber (Eds.). *Biblia pauperum: Nach dem einzigen Exemplare in 50 Darstellungen (früher in Wolfenbüttel, jetzt in der Bibliothèque nationale). Mit einer Einleitung über die Entstehung und Entwicklung der Biblia pauperum unter besonderer Berücksichtigung der uns erhaltenen Handschriften von W. L. Schreiber*. Strasbourg: Heitz, 1903.

Hitler, Adolf. *Mein Kampf*, ed. by Christian Hartmann [et al.]. München [et al.]: Stiftung zur wissenschaftlichen Erforschung der Zeitgeschichte, 2016.

Jacobs, Friedrich Christian Wilhelm. *Beiträge zur ältern Litteratur oder Merkwürdigkeiten der Herzogl. öffentlichen Bibliothek zu Gotha* (vol. 1). Leipzig: Dyk, 1835.

Joyce, James. *Ulysses* (vol. 1–3), ed. by Hans Walter Gabler. New York: Garland, 1984.

Kästner, Erich. *Bei Durchsicht meiner Bücher: Eine Auswahl aus vier Versbänden*. Zürich: Atrium, 1946.

Kant, Immanuel. *Prolegomena zu einer jeden künftigen Metaphysik, die als Wissenschaft wird auftreten können*. Riga: Johann Friedrich Hartknoch, 1783.

Kraus, Franz Xaver (Ed.). *Die Miniaturen der Manesse'schen Liederhandschrift. Im Auftrag des Großherzoglich Badischen Ministeriums der Justiz, des Kultus und Unterrichts nach dem Original der Pariser Nationalbibliothek in unveränderlichem Lichtdruck herausgegeben*. Strasbourg: Trübner, 1887.

Lachmann, Karl (Ed.). *Die Gedichte Walthers von der Vogelweide*. Berlin: G. Reimer, 1827.

— (Ed.). Wolfram von Eschenbach. Berlin: G. Reimer, 1833.

— (Ed.). Gotthold Ephraim Lessings sämmtliche Schriften (vol. 1–13). Berlin: Voß, 1838–1840.

Laib, Friedrich, and Franz Joseph Schwarz (Eds.). *Biblia pauperum*. Zürich: Leo Wörl, 1867.

Lessing, Gotthold Ephraim. "Ehemalige Fenstergemälde im Kloster Hirschau." In: id., *Zur Geschichte und Literatur: Aus den Schätzen der Herzogl. Bibliothek zu Wolfenbüttel* (vol. 2). Braunschweig: Fürstl. Waysenhaus-Buchhandlung, 1773, 317–344 [also published in *Gotthold Ephraim Lessing's sämmtliche Schriften* (vol. 9), ed. by Karl Lachmann, Berlin: Voß, 1839, 228–245].

Lucretius Carus, Titus. *De Rerum Natura Libri Sex*, ed. by Karl Lachmann. Berlin: G. Reimer, 1850.

Menzel, Karl [et al.] (Eds.). *Die Trierer Ada-Handschrift. Mit achtunddreissig Tafeln*. Leipzig: Alphons Dürr, 1889.

Nietzsche, Friedrich. *Nachgelassene Fragmente*. 1885 [cited after *Digitale Kritische Gesamtausgabe* (eKGWB), based on the *Kritische Gesamtausgabe Werke*, ed. by Giorgio Colli and Mazzino Montinari, Berlin / New York: Walter de Gruyter, 1967– and the *Nietzsche Briefwechsel Kritische Gesamtausgabe*, ed. by Paolo D'Iorio, Berlin / New York: Walter de Gruyter, 1975–, 2009-, NF-1885,2[77], online: <http://www.

nietzschesource.org/#eKGWB/NF-1885,2[77]> (accessed 11 March 2023).

—. Zur Genealogie der Moral: Eine Streitschrift, Leipzig: Naumann, 1887 [cited after Digitale Kritische Gesamtausgabe (eKGWB), based on the Kritische Gesamtausgabe Werke, ed. by Giorgio Colli and Mazzino Montinari, Berlin / New York: De Gruyter, 1967– and the Nietzsche Briefwechsel Kritische Gesamtausgabe, ed. by Paolo D'Iorio, Berlin / New York: De Gruyter, 1975–, 2009–, online: <http://www.nietzschesource.org/#eKGWB/> (accessed 27 September 2023)].

Quaritch, Bernard (Ed.). *A Collection of Facsimiles from Examples of Historic or Artistic Book-Binding, Illustrating the History of Binding as a Branch of the Decorative Arts*. London: Quaritch, 1889, online: <https://archive.org/details/collectionoffacs01quar/>.

— (Ed.). *Examples of the Art of Book-Illumination During the Middle Ages. Reproduced in Facsimile*. London: Quaritch, 1889, online: <https://archive.org/details/examplesofartofb00quar/>.

—. *Palæography: Notes Upon the History of Writing and the Mediæval Art of Illumination. Extended from a Lecture, delivered at a Conversazione of the Sette of Odd Volumes, at the Galleries of the Royal Institute of Painters in Water Colours, 12th December, 1893*. London: Quaritch [privately printed], 1894, online: <https://archive.org/details/palographynote00quarrich/>.

Ranke, Leopold von. *Geschichten der romanischen und germanischen Völker von 1494 bis 1514: Zur Kritik neuerer Geschichtsschreiber* (Sämmtliche Werke; vol. 33 and 34). Leipzig: Duncker & Humblot, 1874.

Thülemeyer, Heinrich Günther von. *Tractatio de bulla aurea, argentea, plumbea et cerea in genere, nec non in specie de aurea bulla Caroli IV. imperatoris*. Frankfurt am Main: Bencard, 1697. Staatliche Bibliothek, Regensburg, 999/2Jur.1010, online: <http://mdz-nbn-resolving.de/urn:nbn:de:bvb:12-bsb11057367-8>.

Windelband, Wilhelm. *Geschichte und Naturwissenschaft*. Straßburg: J. H. Ed. Heitz, ³1904, online: <https://archive.org/details/geschichteundnat01wind> [printed version of his inauguration speech as rector of the University of Strasbourg in 1894; translation available as "Recto-

rial Address, Strasbourg, 1894," transl. by Guy Oakes, in: *History and Thought* 19/2 (1980), 169–185.].

Cultural References

MANUSCRIPTS, EARLY PRINTS, FINE ARTS

[block-book] Xylo-5, Bibliothèque nationale de France, Paris, c. 1480–1485, online: <https://gallica.bnf.fr/ark:/12148/bpt6k850504w>.

[manuscript] Cod. Vat. lat. 3819, Biblioteca Apostolica Vaticana, Rome, online: <https://digi.vatlib.it/mss/detail/Vat.lat.3819> (accessed 11 March 2023).

[manuscript] Cod. Guelf. 76 Weiss. (Heinemann 4160), Herzog-August-Bibliothek Wolfenbüttel, online: <http://diglib.hab.de/mss/76-weiss/start.htm?image=00047>.

[manuscript] Cod. 611, Burgerbibliothek, Bern, online: <https://www.e-codices.unifr.ch/de/bbb/0611/134r>.

Bertram von Minden. *Altarpiece with 45 Scenes of the Apocalypse*, altarpiece, c. 1370s–1380s. Victoria and Albert Museum, London, 5940-1859, online: <https://collections.vam.ac.uk/item/O89176/altarpiece-with-45-scenes-of-altarpiece-master-bertram/> (accessed 11 March 2023).

Edridge, Henry. *Portrait of Francis Barber*, water colour on paper, c. 1785. Victoria and Albert Museum, London, 2941-1876, online: <https://collections.vam.ac.uk/item/O136626/portrait-of-francis-barber-water-colour-edridge-henry-ra/> (accessed 21 August 2023).

[in the manner of] Reynolds, Sir Joshua (1723–1792). *Portrait of Francis Barber*, oil on canvas, second half 18th century. Tate Britain, London, N05843, online: <https://www.tate.org.uk/art/artworks/reynolds-portrait-of-a-man-probably-francis-barber-n05843> (accessed 21 August 2023).

[in the manner of] Reynolds, Sir Joshua (1723–1792). *Portrait of Francis Barber*, oil on canvas, second half 18th century. Tate Britain, London, T01892, online: <https://www.tate.org.uk/art/artworks/reynolds-portrait-of-a-man-probably-francis-barber-t01892> (accessed 21 August 2023).

van Gogh, Vincent. *Worn Out*, pencil on paper, 1882. Van Gogh Museum, Amsterdam, F0997 / JH0267, online: <https://www.vangoghmuseum.nl/en/collection/d0378V1962> (accessed 22 August 2023).

—. *At Eternity's Gate*, lithograph on paper, 1882. Van Gogh Museum, Amsterdam, F1662 / JH0268, online: <https://www.vangoghmuseum.nl/en/collection/p0007V1962> (accessed 22 August 2023).

—. *Treurende oude man* ('At Eternity's Gate'), oil on canvas, 1890. Kröller-Müller Museum, Otterlo, F702 / JH1967, online: <https://krollermuller.nl/en/vincent-van-gogh-sorrowing-old-man-at-eternity-s-gate> (accessed 22 August 2023).

Herrad von Landsberg. *Hortus deliciarum*, illuminated manuscript, c. 1167–1175.

- Engelhardt, C. M. (Ed.). *Herrad von Landsperg [...] und ihr Werk, Hortus deliciarum: Ein Beytrag zur Geschichte der Wissenschaften, Literatur, Kunst, Kleidung, Waffen und Sitten des Mittelalters*. Stuttgart [et al.]: Cotta, 1818, online: <http://catalogue.bnf.fr/ark:/12148/cb419048381>.
- Straub, Alexandre, and Gustave Keller (Eds.). *Herrade de Landsberg: Hortus deliciarum*. Strasbourg: Impr. strasbourgeoise, en commission chez Trübner, 1899, online: <https://archive.org/details/gri_33125010499123/>.
- Green, Rosalie [et al.] (Eds.). *Hortus Deliciarum* (2 vols.). Leiden [et al.]: Brill, 1979.

Kepler, Johannes. *Prodromus dissertationum cosmographicarum* [...]. Tübingen: Georg Gruppenbach, 1596. ETH Library Zürich, RAR 1367: 1, online: <https://doi.org/10.3931/e-rara-445>.

Newman, Barnett. *Vir Heroicus Sublimis*, oil on canvas, 1950–1951. Museum of Modern Art, New York, 240.1969, online: <https://www.moma.org/collection/works/79250> (accessed 24 August 2023).

Nicolaus de Hanapis. *Liber de exemplis Sacrae Scripturae (Biblia pauperum)*, manuscript, second half 14th century. Bayerische Staatsbibliothek München, Clm 14099, microform reproduction available online: <http://mdz-nbn-resolving.de/urn:nbn:de:bvb:12-bsb00035051-6>.

—. *Biblia pauperum a domino Bonaventura edita*, incunabula, Strasbourg: Johann Prüß, 1490. Dombibliothek Freising, J 135-136, online: <http://mdz-nbn-resolving.de/urn:nbn:de:bvb:12-bsb00062350-6>.

Osiander, Andreas. *Sant Hildegarten weissagung vber die Papisten vnd genanten geistlichen, welcher erfüllung zu vnsern zeyten hat angefangen, vnd volzogen soll werden*. VD 16 H 3633. Zwickau: Gabriel Kantz, 1527. München, BSB, 4 H.eccl. 827, online: <https://mdz-nbn-resolving.de/urn:nbn:de:bvb:12-bsb10160056-2>.

Osiander, Andreas, Erhard Schön and Hans Sachs. *Eyn wunderliche Weyssagung von dem Babstumb wie es yhm biß an das endt der welt gehen sol jn figuren oder gemæl begriffe gefunden zu Nuermberg ym Cartheuser Closter vnd ist seher alt. Eyn vorred Andreas Osianders. Mit g°utter verstendtlicher außlegung durch gelerte leut verklert. Welche Hans Sachs yn teutsche reymen gefast vnd darzu gesetzt hat*. 1527.

- VD 16 W 4642. Nürnberg: Guldenmund, 1527. University of Oxford, Bodleian Libraries, Taylor Institution Library, ARCH.80.G.1527(8), online: <https://editions.mml.ox.ac.uk/editions/weyssagung/> (accessed 2 July 2023).
- VD 16 W 4645. Zwickau: Gabriel Kantz. 1527. München, BSB, 4 H.eccl. 826, online: <https://mdz-nbn-resolving.de/urn:nbn:de:bvb:12-bsb10160055-6>.
- VD 16 W 4645. Zwickau: Gabriel Kantz. 1527. München, BSB, Res/4 H.eccl. 870,29, online: <https://mdz-nbn-resolving.de/urn:nbn:de:bvb:12-bsb00053611-6>.

Peter of Poitiers. *Compendium historiae in genealogia Christi*, decorated roll, first half 14th century. Yale University Library, Beinecke MS 1183, online: <https://collections.library.yale.edu/catalog/15761199> (accessed 1 August 2023).

Rembrandt van Rijn. *De Nachtwacht* ('The Night Watch'), oil on canvas, 1642. Rijksmuseum, Amsterdam, SK-C-5, online: <https://www.rijksmuseum.nl/en/collection/SK-C-5> (accessed 29 September 2023).

Spitzweg, Carl. *Der arme Poet* ('The Poor Poet'), oil on canvas, 1839. Bayerische Staatsgemäldesammlungen – Neue Pinakothek, München, 7751, WWV 125, online: <https://www.sammlung.pinakothek.de/de/artwork/9pL3KbKLeb> (accessed 29 September 2023).

—. *Der Bücherwurm* ('The Bookworm'), oil on canvas, c. 1850. Grohmann Museum, Milwaukee, WWV 541, online: <https://artsandculture.google.com/asset/the-bookworm-carl-spitzweg/2AEU4e2l7s1sRg> (accessed 29 September 2023).

Cultural References
FILM WORKS

Algiers (1938), dir. John Cromwell.

All Quiet on the Western Front (1930), dir. Lewis Milestone.

Anders als die Andern (1919), dir. Richard Oswald.

∟ Filmmuseum München (Edition Filmmuseum; 4) DVD, 2006 / 2007 / 2011 / 2022.

東邪西毒 ('Ashes of Time', 1994), dir. Wong Kar Wai.

! re-released as *Ashes of Time Redux* in 2008.

Baby Face (1933), dir. Alfred E. Green.

La belle équipe (1936), dir. Julien Duvivier.

Berlin – Alexanderplatz (1931), dir. Phil Jutzi.

Blade Runner (1982), dir. Ridley Scott.

Der blaue Engel (1930), dir. Josef von Sternberg.

The Blue Angel (1930), dir. Josef von Sternberg.

∟ Eureka (Masters of Cinema; 49) DVD / Blu-ray, 2013.
∟ Kino DVD, 2001.
∟ Kino Lorber Blu-ray, 2013.
∟ Friedrich-Wilhelm-Murnau-Stiftung / Universum Film DVD, 2001 / 2012.

喋血街頭 ('Bullet in the Head', 1990), dir. John Woo.

Das Cabinet des Dr. Caligari (1920), dir. Robert Wiene.

∟ Eureka (Masters of Cinema; 92) Blu-ray, 2014.

Carmen Jones (1954), dir. Otto Preminger.

Casablanca (1942), dir. Michael Curtiz.

Citizen Kane (1941), dir. Orson Welles.

Design for Living (1933), dir. Ernst Lubitsch.

∟ Criterion (Collection; 592) DVD / Blu-ray, 2011.

Die Drei von der Tankstelle ('The Three from the Filling Station', 1930), dir. Wilhelm Thiele.

└ Friedrich-Wilhelm-Murnau-Stiftung / Universum Film DVD, 2018 [released as part of *Die große Heinz Rühmann-Box*].

Le chemin du paradis ('The Road to Paradise', 1930), dir. Wilhelm Thiele / Max De Vaucorbeil.

└ René Chateau Vidéo DVD, 2016.

Die Dreigroschenoper ('The Threepenny Opera', 1931), dir. G. W. Pabst.

L'opera de quat'sous ('The Threepenny Opera', 1931), dir. G. W. Pabst.

└ Criterion (Collection; 405) DVD, 2007.

E.T. the Extra-Terrestrial (1982), dir. Steven Spielberg.

Faust – eine deutsche Volkssage (1926), dir. F. W. Murnau.

└ Eureka (Masters of Cinema; 78) DVD / Blu-ray, 2014.
└ Filmmuseum München (Edition Filmmuseum; 114) DVD, 2020.

Gaslight (1940), dir. Thorold Dickinson.

Gaslight (1944), dir. George Cukor.

Ich bei Tag und Du bei Nacht (1932), dir. Ludwig Berger.

À moi le jour, à toi la nuit (1932), dir. Ludwig Berger / Claude Heymann.

Early to Bed (1932), dir. Ludwig Berger.

Dr. Jekyll and Mr. Hyde (1931), dir. Rouben Mamoulian.

Der Kurier des Zaren (1936), dir. Richard Eichberg.

Michel Strogoff. Le courrier du tzar (1936), dir. Richard Eichberg / Jacques de Baroncelli.

The Soldier and the Lady (1937), dir. George Nichols jr.

Les Misérables (1934), dir. Raymond Bernard.

└ Pathé DVD / Blu-ray, 2013.

Macbeth (1948), dir. Orson Welles.

Metropolis (1927), dir. Fritz Lang.

└ Universität der Künste Berlin, study edition DVD, 2006.
└ *The Complete Metropolis*, Kino Lorber DVD / Blu-ray, 2010 [reconstruction also released as *Metropolis*, Eureka (Masters of Cinema; 8 / 16) DVD / Blu-ray, 2010].

The Moon is Blue (1953), dir. Otto Preminger.
Die Jungfrau auf dem Dach (1953), dir. Otto Preminger.

Napoléon (1927), dir. Abel Gance.

Night and the City (1950), dir. Jules Dassin.

└ Criterion (Collection; 274) DVD / Blu-ray, 2015.

La Passion de Jeanne d'Arc ('The Passion of Joan of Arc', 1928), dir. Carl Theodor Dreyer.

└ Criterion (Collection; 62) DVD / Blu-ray, 1999 / 2018.

Pépé le Moko (1937), dir. Julien Duvivier.

Public Enemy (1931), dir. William A. Wellman.

Queen Kelly (1928), dir. Erich von Stroheim.

空山靈雨 ('Raining in the Mountain', 1979), dir. King Hu.

└ Eureka (Masters of Cinema; 215) DVD / Blu-ray, 2020.

The Red Shoes (1948), dir. Michael Powell / Emeric Pressburger.

Scarface (1932), dir. Howard Hawks.

Seven Brides for Seven Brothers (1954), dir. Stanley Donen.

The Sign of the Cross (1932), dir. Cecil B. DeMille.

The Sound of Music (1965), dir. Robert Wise.

Star Wars: IV–VI (1977–1983), dir. George Lucas.

Sunset Boulevard (1950), dir. Billy Wilder.

Tabu: A Story of the South Seas (1931), dir. F. W. Murnau.

蜘蛛巢城 ('Throne of Blood', 1957), dir. Akira Kurosawa.

Varieté (1925), dir. Ewald André Dupont.

└ Friedrich-Wilhelm-Murnau-Stiftung DVD / Blu-ray, 2015.

Veeram (2016), dir. Jayaraj.

Whiplash (2013), short film, dir. Damien Chazelle.

Whiplash (2014), dir. Damien Chazelle.

∟ Sony Home Entertainment Blu-ray, 2020.

Wings (1927), dir. William A. Wellman.

∟ Eureka (Masters of Cinema; 77) DVD / Blu-ray, 2014.

b. online resources

Online Resources
INSTITUTIONS, INITIATIVES, ONTOLOGIES

AdA Filmontology, <https://projectada.github.io/ontology/> (accessed 25 September 2023).

Chinese Iconography Thesaurus (CIT), led by Hongxing Zhang, 2019–present, <https://chineseiconography.org> (accessed 8 August 2023).

CIDOC CRM, <http://www.cidoc-crm.org/> (accessed 8 February 2023).

Scholarship in 3D Digital Publishing Cooperative, <https://3dpublishingcooperative.com/> (accessed 4 June 2020; not accessible anymore 4 January 2023; see the archived version in the Internet Archive).

Iconclass, <http://www.iconclass.org/> (accessed 6 January 2023).

International Image Interoperability Framework (IIIF), <https://iiif.io/> (accessed 20 February 2023).

Internet Archive, <https://archive.org> (accessed 27 September 2023).

Louis Armstrong House Museum, <https://collections.louisarmstronghouse.org/> (accessed 4 January 2023).

Music Encoding Initiative (MEI), <https://music-encoding.org/> (accessed 27 September 2023).

Schnittberichte.com, <https://www.schnittberichte.com/> (accessed 29 September 2023).

SecondHandSongs, <https://secondhandsongs.com/> (accessed 13 June 2023).

Text Encoding Initiative (TEI), <https://tei-c.org/> (accessed 8 February 2023).

Online Resources

TOOLS, SOFTWARE, SOLUTIONS

Advene, <http://www.advene.org/> (accessed 28 August 2023).

Biblissima, search of IIIF collections, <https://iiif.biblissima.fr/collections> (accessed 1 October 2023).

CollateX, <https://collatex.net/> (accessed 15 September 2023).

Celluloid, <https://celluloid.huma-num.fr/> (accessed 28 August 2023).

EVT – Edition Visualization Technology, led by Roberto Rosselli Del Turco, University of Pisa, 2013–present, <http://evt.labcd.unipi.it/> (accessed 28 February 2023).

MemoRekall, <https://memorekall.com/en/> (accessed 28 August 2023).

Mukurtu Content Management System, <https://mukurtu.org/> (accessed 28 February 2023).

TEI Publisher, led by e-editiones, 2015–present, <https://teipublisher.com/> (accessed 28 February 2023).

Transkribus, <https://readcoop.eu/transkribus/> (accessed 20 February 2023).

UVic Image Markup Tool, <https://hcmc.uvic.ca/~mholmes/image_markup/> (accessed 20 February 2023).

Online Resources

EDITIONS, ARCHIVES, PROJECTS

Beckett Digital Manuscript Project (BDMP), <https://www.beckettarchive.org/> (accessed 20 February 2023).

Beethovens Werkstatt, ed. by Bernhard R. Appel [et al.], Detmold University of Music, Paderborn University, Academy of Sciences and Literature Mainz, Beethoven House Bonn, 2014–present, <https://beethovens-werkstatt.de/> (accessed 4 January 2023).

Berliner Intellektuelle 1800-1830, ed. by Anne Baillot [et al.], Humboldt University of Berlin, 2011–2017, <https://www.berliner-intellektuelle.eu/> (accessed 4 January 2023).

Biblioteca Digital Siglo de Oro (BIDISO), Universidade da Coruña, <https://www.bidiso.es/Emblematica/> (accessed 6 January 2023).

C21 Editions, James O'Sullivan [et al.], University College Cork, University of Sheffield, University of Glasgow, 2021–2024, <https://www.c21editions.org/> (accessed 7 January 2023).

Carl-Maria-von-Weber-Gesamtausgabe (WeGA), ed. by Gerhard Allroggen [et al.], Akademie der Wissenschaften und der Literatur Mainz, 2011–present, <https://weber-gesamtausgabe.de/> (accessed 20 February 2023).

Concordantiae caritatis by Ulrich von Lilienfeld, ed. by Martin Roland, <https://www.univie.ac.at/paecht-archiv-wien/cc_html/cc-startseite.html> (accessed 11 March 2023).

Die deutschen Inschriften, ed. by the Academies of Sciences of Göttingen, Heidelberg, Mainz, München and the Austrian Academy of Sciences in Wien, Wiesbaden: Reichert, 1942–present; *Deutsche Inschriften Online* (DIO), <http://www.inschriften.net/> (accessed 12 January 2023).

Diebold Lauber digital, led by Sabine Griese, University of Leipzig, 2013–2015, <http://wirote.informatik.uni-leipzig.de/mediavistik/> (accessed 12 January 2023).

Digital Musicology, Austrian Academy of Sciences, 2018–present, <http://www.digital-musicology.at/en-uk/index.html> (accessed 4 January 2023).

eCodicology, led by Andrea Rapp, Claudine Moulin and Rainer Stotzka, Technical University of Darmstadt, Karlsruhe Institute of Technology, University of Trier, 2013–2016, <http://www.ecodicology.org/> (accessed 20 February 2023).

edition humboldt digital, ed. by Ottmar Ette, Berlin-Brandenburgische Akademie der Wissenschaften, 2016–present, <https://edition-humboldt.de/> (accessed 28 February 2023).

Emblem Project Utrecht: Dutch Love Emblems of the Seventeenth Century, ed. by Peter Boot [et al.], University of Utrecht, Royal Library of the Netherlands, Digital Library for Dutch Language and Literature, Glasgow University, 2003–2006, <https://emblems.hum.uu.nl/> (accessed 6 January 2023).

Emblematica Online, Herzog August Bibliothek Wolfenbüttel, University of Illinois at Urbana-Champaign (UIUC), 2010–present, <http://emblematica.grainger.illinois.edu/> (accessed 6 January 2023).

Ernst Toller: Digitale Briefedition, ed. by Stefan Neuhaus [et al.], <http://www.tolleredition.de/> (accessed 20 February 2023).

eTaRDiS – Exploration Temporaler und Räumlicher Daten in Immersiven Szenarien, University of Bielefeld, 2021–2023, <https://digital-history.uni-bielefeld.de/etardis/> (accessed 13 February 2023).

FAMA: Œuvres latines médiévales à succès, ed. by Pascale Bourgain and Dominique Stutzmann, CNRS, IHRT, École nationale des chartes, <http://fama.irht.cnrs.fr> (accessed 28 September 2023).

Filmportal, DFF – Deutsches Filminstitut & Filmmuseum, <https://www.filmportal.de/> (accessed 29 September 2023).

F. W. Murnaus ›Tabu‹ – Die Edition der Outtakes, ed. by Bernd Eichhorn, Karin Herbst-Meßlinger, Martin Koerber, Deutsche Kinemathek – Museum für Film und Fernsehen, Österreichisches Filmmuseum, Friedrich-Wilhelm-Murnau-Stiftung, <https://www.deutsche-kinemathek.de/de/sammlungen-archive/sammlung-digital/murnaus-tabu> (accessed 6 January 2023).

Geschichte als visuelles Konzept: Peter von Poitiers' Compendium historiae, led by Patrick Sahle, Andrea Worm and Roman Bleier, University of Wuppertal, University of Tübingen, University of Graz, 2022–2025,

<https://gepris.dfg.de/gepris/projekt/504265959> (accessed 1 August 2023).

Hannah Arendt: Kritische Gesamtausgabe, ed. by Anne Eusterschulte [et al.], <https://hannah-arendt-edition.net/> (accessed 20 February 2023).

Ilanot, led by J. H. Chajes, University of Haifa, State and University Library Göttingen, 2019–2024, <https://ilanot.org> (pre-alpha proof-of-concept portal, accessed 1 August 2023). See also <https://ilanot.haifa.ac.il/> (accessed 1 August 2023).

The Index of Digital Humanities Conferences, ed. by Scott B. Weingart [et al.], Carnegie Mellon University, 2020–present, <https://dh-abstracts.library.virginia.edu/> (accessed 8 February 2023) [also accessible under <https://doi.org/10.34666/k1de-j489>].

Jheronimus Bosch, the Garden of Earthly Delights, Nederlandse Publieke Omroep (NPO), NTR, Pieter van Huystee Film, <https://tuinderlusten-jheronimusbosch.ntr.nl/en> (accessed 12 January 2023).

Johann Wolfgang Goethe: Faust. Historisch-kritische Edition, ed. by Anne Bohnenkamp, Silke Henke, Fotis Jannidis [et al.], Frankfurt am Main [et al.], 2018–present, <http://www.faustedition.net/> (version 1.2 RC accessed 6 January 2023).

Katalog der deutschsprachigen illustrierten Handschriften des Mittelalters (KdiH; vol. 1–), initiated by Hella Frühmorgen-Voss and Norbert H. Ott, ed. by Ulrike Bodemann, Kristina Freienhagen-Baumgardt, Pia Rudolph, Peter Schmidt, Christine Stöllinger-Löser and Nicola Zotz, München: C. H. Beck, 1991–present, online: <https://kdih.badw.de/das-projekt.html> (accessed 11 March 2023) [see the database *Deutschsprachige illustrierte Handschriften des Mittelalters* which is based on the KdiH and covers, at the date of access, the first eight volumes; cf. <https://kdih.badw.de/datenbank/start> (accessed 12 June 2023)].

Letters of 1916–1923, ed. by Susan Schreibman, Maynooth University, 2013–present, <https://letters1916.ie/> (accessed 26 February 2023).

Mapping the Republic of Letters, Stanford University [et al.], 2008–2017, <http://republicofletters.stanford.edu/> (accessed 12 February 2023).

Measuring Polyphony: Digital Encodings of Late Medieval Music, ed. by Karen Desmond [et al.], Brandeis University, 2018–2020, <https://measuringpolyphony.org/> (accessed 4 January 2023).

Motion Picture Association of America. Production Code Administration records, Margaret Herrick Library, <http://digitalcollections.oscars.org/digital/collection/p15759coll30> (accessed 26 August 2023).

Ms. Codex 1066: Genealogical Chronicle of the Kings of England to Edward IV, circa 146, ed. by Dot Porter [et al.], Schoenberg Institute for Manuscript Studies, University of Pennsylvania Libraries, 2012 [relaunch on Digital Mappa v.2 in 2022], <https://www.library.upenn.edu/exhibits/ms-roll-1066> (accessed 1 August 2023).

Odeuropa, led by Inger Leemans [et al.], KNAW Humanities Cluster Amsterdam [et al.], 2021–2023, <https://odeuropa.eu/> (accessed 28 February 2023).

Operation Night Watch, Rijksmuseum Amsterdam, 2019–2021, <https://www.rijksmuseum.nl/en/stories/operation-night-watch> (accessed 27 August 2023).

Oral Tales of Mongolian Bards, ed. by Walther Heissig, Bonn University, University of Cologne, 2012–2020, <https://mongoltales.awk.nrw.de/> (accessed 20 February 2023).

Ovide moralisé ou La Bible des poètes en images: Comparaison de deux cycles iconographiques avec IIIF et Mirador, Biblissima, <https://demos.biblissima.fr/ovide-moralise/> (accessed 20 February 2023).

Passauer Liedertisch, Austrian Academy of Sciences, 2018, <http://www.digital-musicology.at/en-uk/edi_tisch_pre.html> (accessed 4 January 2023).

Plücker Collection, London Mathematical Society, <http://www.lms.ac.uk/archive/plucker-collection> (accessed 7 February 2023).

Proyecto Humboldt Digital, led by Tobias Kraft and Eritk Guerra, Berlin-Brandenburgische Akademie der Wissenschaften, Oficina del Historiador de La Ciudad de La Habana, 2019–present, <https://habanaberlin.hypotheses.org/> (accessed 28 February 2023).

REALonline, Institut für Realienkunde des Mittelalters und der frühen Neuzeit in Krems, University of Salzburg, relaunched in 2019, <https://realonline.imareal.sbg.ac.at/> (accessed 20 February 2023).

The Shelley-Godwin Archive, ed. by Neil Fraistat, Elizabeth Denlinger and Raffaele Viglianti, New York Public Library [et al.], 2013–present, <http://shelleygodwinarchive.org/> (accessed 6 January 2023).

Theodor Fontane: Notizbücher. Digitale genetisch-kritische und kommentierte Edition, ed. by Gabriele Radecke, <https://fontane-nb.dariah.eu/index.html> (accessed 20 February 2023).

Vincent van Gogh: The Letters, ed. by Leo Jansen, Hans Luijten and Nienke Bakker, <http://vangoghletters.org/vg/> (accessed 20 February 2023).

Virtual Angkor, Monash University, 2018–present, <https://www.virtualangkor.com/> (accessed 13 February 2023).

Virtual Paul's Cross, led by John N. Wall, NC State University, 2011–2021, <https://vpcross.chass.ncsu.edu/> (accessed 13 February 2023).

Welscher Gast Digital, ed. by Jakub Šimek, University of Heidelberg, 2015–present <http://digi.ub.uni-heidelberg.de/wgd/> (accessed 6 January 2023).

The William Blake Archive, ed. by Morris Eaves, Robert Essick and Joseph Viscomi, Institute for Advanced Technology in the Humanities, University of Virginia, 1996–present, <http://www.blakearchive.org/> (accessed 6 January 2023).

Online Resources

PRESENTATIONS, BLOG POSTS, WHITE PAPERS

[s.n.]. "The Yellow Milkmaid Syndrome: Paintings with Identity Problems." Blog post. In: *Europeana* (7 January 2015), online: <https://pro.europeana.eu/post/the-yellow-milkmaid-syndrome-paintings-with-identity-problems> (accessed 22 August 2023).

Bakels, Jan-Hendrik [et al.]. "AdA Filmontology – a machine-readable Film Analysis Vocabulary for Video Annotation." Paper at the *Digi-*

tal Humanities Conference 2020, Ottawa, Canada, 22–24 July 2020, abstract: <https://dh2020.adho.org/wp-content/uploads/2020/07/488_AdAFilmontologyamachinereadableFilmAnalysisVocabularyforVideo-Annotation.html> (accessed 25 September 2023).

Besson, Rémy [et al.]. "L'annotation vidéo pour la recherche. Usages et outils numériques." White paper from the consortium CANEVAS, 2023, online: <https://hal.science/hal-04048886>.

Bohn, Anna. "Multimediale Edition." Blog post. In: *Filmeditio* (10 January 2016), online: <https://filmeditio.hypotheses.org/515> (accessed 20 February 2023).

Fritze, Christiane [et al.]. "Manifest für digitale Editionen." Blog post, ed. by the Institut für Dokumentologie und Editorik. In: *DHdBlog: Digital Humanities im deutschsprachigen Raum* (11 March 2022), online: <https://dhd-blog.org/?p=17563> (accessed 6 January 2023).

Kaplan, Frédéric. "How to Build an Information Time Machine." Presentation at *TEDxCaFoscariU* (June 2013), online: <https://www.ted.com/talks/frederic_kaplan_how_to_build_an_information_time_machine> (accessed 8 February 2023).

Wong, Kar Wai. "World of Wong Kar Wai: Director's Note." Blog post. In: *The Criterion Collection* (23 March 2021), online: <https://www.criterion.com/current/posts/7325-world-of-wong-kar-wai-director-s-note> (accessed 30 August 2023).

Koresky, Michael. "Eclipse Series 4: Raymond Bernard." Blog post. In: *The Criterion Collection: On Film* (24 July 2007), online: <https://www.criterion.com/current/posts/587-eclipse-series-4-raymond-bernard> (accessed 28 August 2023).

Porter, Dot. "A Roll May Scroll but It Is Not a Webpage: Issues of Presenting Pennsylvania, Penn Libraries, MS Roll 1066 in a Digital Environment." Paper presented at the *International Medieval Congress*, Leeds, UK, 3–6 July 2023, session abstract online: <https://www.imc.leeds.ac.uk/imcarchive/2023/sessions/838/> (accessed 2 October 2023).

Robertson, Stephen [et al.]. "Digital History and Argument." White paper by *Arguing with Digital History* working group, Roy Rosenzweig Center for History and New Media (13 November 2017), online: <https://

rrchnm.org/portfolio-item/digital-history-argument-white-paper/> (accessed 11 February 2023).

Robinson, Peter. "What Digital Humanists Don't Know about Scholarly Editing; What Scholarly Editors Don't Know about the Digital World." Paper presented at the *Social, Digital, Scholarly Editing* conference at the University of Saskatchewan, 11–13 July 2013, online: <https://doi.org/10.5281/zenodo.4024290>.

Sanderson, Robert [et al.]. "SharedCanvas: A Collaborative Model for Medieval Manuscript Layout Dissemination." Paper presented at the *Joint Conference on Digital Libraries* (JCDL), Ottawa, Canada, 13–17 June 2011, online: <https://doi.org/10.48550/arXiv.1104.2925>.

Sperberg-McQueen, C. M. "Towards a Critique of Digital Reason." Opening lecture at the 10th European Summer University in Digital Humanities *Culture & Technology* (ESUDH 2019), Leipzig, Germany, 23 July 2019, online: <http://doi.org/10.5281/zenodo.3351703>.

Verwayen, Harry, Martijn Arnoldus and Peter B. Kaufman. "The Problem of the Yellow Milkmaid: A Business Model Perspective on Open Metadata." *Europeana* white paper 2 (2011), [1–25], online: <https://pro.europeana.eu/post/the-problem-of-the-yellow-milkmaid> (accessed 22 August 2023).

Online Resources

NEWS, EDITORIALS, INTERVIEWS

[editors]. "Fritz Lang's 'Metropolis:' Key Scenes Rediscovered." In: *ZEITmagazin* (2 July 2008), online: <https://www.zeit.de/online/2008/27/metropolis-vorab-englisch> (accessed 28 August 2023).

[s.n.]. "New Work by Van Gogh Discovered." Press release. Van Gogh Museum (16 September 2021), online: <https://www.vangoghmuseum.nl/en/about/news-and-press/press-releases/new-work-by-van-gogh-discovered> (accessed 22 August 2023).

Adam, David. "Modelling the Pandemic: The Simulations Driving the World's Response to COVID-19." In: *Nature* 580 (2020), 316–318, online: <https://doi.org/10.1038/d41586-020-01003-6>.

Boffey, Daniel. "'Like a Military Operation:' Restoration of Rembrandt's Night Watch Begins." In: *The Guardian* (5 July 2019), online: <https://www.theguardian.com/artanddesign/2019/jul/05/restoration-rembrandt-night-watch-begins-rijksmuseum-amsterdam> (accessed 27 August 2023).

Cohen, Patricia. "In Tough Times, the Humanities Must Justify Their Worth." In: *New York Times* (24 February 2009), online: <https://www.nytimes.com/2009/02/25/books/25human.html> (accessed 12 January 2023).

D'Angelo, Mike. "Criterion Offers Two Distinct Versions of One Terrific Noir: Night and the City." Review. In: *AV Club* (5 August 2015), online: <https://film.avclub.com/criterion-offers-two-distinct-versions-of-one-terrific-1798184543> (accessed 30 August 2023).

Erdmann, Robert, and Casper van der Kruit. "Operation Night Watch: How Rijksmuseum Tapped AI To Restore A Rembrandt." Interview by Fei Lu. In: *Jing Culture & Crypto* (15 July 2021), online: <https://jingculturecrypto.com/rijksmuseum-rembrandt-night-watch-ai-restoration/> (accessed 27 August 2023).

Heidegger, Martin. "Nur noch ein Gott kann uns retten." Interview by Rudolf Augstein and Georg Wolff. In: *Der Spiegel* 23/30 (31 May 1976), 193–219 [interview conducted in 1966, published posthumously].

Kael, Pauline. "Raising Kane–I." In: *The New Yorker* (12 February 1971), online: <https://www.newyorker.com/magazine/1971/02/20/raising-kane-i> (accessed 25 August 2023).

—. "Raising Kane–II." In: *The New Yorker* (19 February 1971), online: <https://www.newyorker.com/magazine/1971/02/27/raising-kane-ii> (accessed 25 August 2023).

Kelly, John. "With Closed Captioning, Music Can Help Tell a Story." In: *The Washington Post* (24 July 2013), online: <https://www.washingtonpost.com/local/with-closed-captioning-music-can-help-tell-a-story/2013/07/24/18a172e2-f3d2-11e2-aa2e-4088616498b4_story.html> (accessed 30 August 2023).

Kirschbaum, Erik. "'Metropolis' Footage Found in Argentina." In: *Variety* (2 July 2008), online: <https://variety.com/2008/film/news/metropolis-footage-found-in-argentina-1117988440/> (accessed 28 August 2023).

Moretti, Franco. "Als ob ich die Literatur an Barbaren verrate." Interview by Anne Haeming. In: *Spiegel Online* (6 June 2016), online: <http://www.spiegel.de/kultur/literatur/franco-moretti-als-ob-ich-die-literatur-an-barbaren-verrate-a-1096078.html> (accessed 12 January 2023).

Naughton, John. "Enjoy the Restored Night Watch, But Don't Ignore the Machine Behind the Rembrandt." In: *The Guardian* (3 July 2021), online: <https://www.theguardian.com/technology/commentisfree/2021/jul/03/enjoy-the-restored-night-watch-but-dont-ignore-the-machine-behind-the-rembrandt> (accessed 27 August 2023).

Peña, Fernando Martín. "Metropolis Found." In: *Undercurrent* 6 (2010), online: <http://fipresci.hegenauer.co.uk/undercurrent/issue_0609/pena_metropolis.htm> (accessed 4 October 2020; not accessible anymore 28 August 2023; see the archived version in the Internet Archive).

Père, Olivier. "La Belle Equipe de Julien Duvivier." In: *ARTE Cinéma* (29 March 2016), online: <https://www.arte.tv/sites/olivier-pere/2016/03/29/la-belle-equipe-de-julien-duvivier/> (accessed 1 September 2023).

Rich, Frank. "Roaring at the Screen With Pauline Kael." In: *New York Times* (27 October 2011), online: <https://www.nytimes.com/2011/10/30/books/review/roaring-at-the-screen-with-pauline-kael.html> (accessed 25 August 2023).

Rosen, Jody. "The Day the Music Burned." In: *New York Times* (11 June 2019), online: <https://www.nytimes.com/2019/06/11/magazine/universal-fire-master-recordings.html> (accessed 21 August 2023).

Sandkühler, Hans Jörg. "Kaum einer, der sich nicht angepasst hätte." Interview by Catherine Newmark. In: *Philosophie Magazin* special issue 3 (2014), 57–62, online: <https://www.philomag.de/artikel/hans-joerg-sandkuehler-es-hat-uns-nicht-interessiert> (accessed 2 October 2023).

Schmidt, Tino. "'The Complete Metropolis:' Eine Ausstellung der deutschen Kinemathek in Berlin vom 21.01. bis 25.04.2010." In: *Zeitgeschichte-Online* (1 February 2010), online: <https://zeitgeschichte-online.de/geschichtskultur/complete-metropolis> (accessed 28 August 2023).

Schuessler, Jennifer. "Medieval Scholars Spar on a Modern Battlefield: Twitter." In: *New York Times* (6 May 2022), online: <https://www.ny-

times.com/2022/05/06/arts/medieval-race-twitter.html> (accessed 9 February 2023).

Schulz, Kathryn. "What Is Distant Reading?" In: *The New York Times* (24 June 2011), online: <https://www.nytimes.com/2011/06/26/books/review/the-mechanic-muse-what-is-distant-reading.html> (accessed 12 January 2023).

Scorsese, Martin. "My Friendship with Michael Powell." Interview by Steve Rose. In: *The Guardian* (14 May 2009), online: <https://www.theguardian.com/film/2009/may/14/scorsese-michael-powell-red-shoes> (accessed 27 August 2023).

Sharf, Zack. "Steven Spielberg Regrets Editing Guns Out of 'E.T.,' Says 'No Film Should Be Revised' for Today's Standards: 'That Was a Mistake'." In: *Variety* (25 April 2023), online: <https://variety.com/2023/film/news/steven-spielberg-regrets-editing-guns-et-censorship-1235594163/> (accessed 1 September 2023).

Tischendorf, Tamara. "Sexualwissenschaft und die Bücherverbrennung." In: *Deutschlandfunk* (7 May 2008), online: <https://www.deutschlandfunk.de/sexualwissenschaft-und-die-buecherverbrennung.691.de.html?dram:article_id=51607> (accessed 25 August 2023).

Online Resources

VIDEOS, RECORDINGS

[Channel: Cozy Weather]. "Whiplash Movie and Short Comparison (Short Audio Only)." 5 July 2015, <https://www.youtube.com/watch?v=AiSYjRJeLTk> (accessed 1 September 2023).

[Channel: Movie LUTs]. "Why do Short Films look like that?" 23 March 2023, <https://www.youtube.com/watch?v=a5uiGFkjaDQ> (accessed 1 September 2023).

[Channel: Irina]. "'Queen Kelly' presented in person by Gloria Swanson Part 2." 25 March 2010, <https://www.youtube.com/watch?v=t-1N0c5hJEjA> (accessed 1 September 2023).

Gumbrecht, Hans Ulrich, Georg Mein and Ludwig Neyses. *Talk! Humanities* (episode 1, 13 August 2019). University of Luxemburg, online:

<https://www.youtube.com/watch?v=Ms8zgavXTp8> (accessed 1 September 2023).

Liu, Alan. "Humans in the Loop: Humanities Hermeneutics & Machine Learning." Closing keynote at the *DHd2020* conference, Paderborn, Germany, 2–6 March 2020, online: <https://www.youtube.com/watch?v=lnfeOUBCi3s> (accessed 1 September 2023).

Prudenko, Yanina, Lev Manovich, Alexey Shulgin, Vladimir Velminsky, Vladimir Gubailovsky, Andrey Smirnov and Nikolai Konstantinov, "Советские digital humanities и цифровое творчество." Panel discussion (5 April 2019), online: <https://theoryandpractice.ru/videos/1426-kibernetika-stala-novoy-religiey-kak-razvivalis-digital-humanities-v-sssr> (transcription) and <https://www.youtube.com/watch?v=Af5G9MNBY3w> (both accessed 1 September 2023).

Sperberg-McQueen, C. M. "The Hermeneutics of Data Representation." Presentation at the conference *Representing Knowledge in the Digital Humanities*, University of Kansas, USA, 24 September 2011, online: <https://www.youtube.com/watch?v=BF_g1WvDDtU> (accessed 15 September 2023).

—. "Kritik der digitalen Vernunft." Closing keynote at the DHd 2018 Conference, Cologne, Germany, 3 March 2018, online: <https://www.youtube.com/watch?v=J6csNvv5TIk> (accessed 15 September 2023).

c. research literature

Research Literature

ENTRIES IN ENCYCLOPAEDIAE, CATALOGUES

[s.n.]. 'All Quiet on the Western Front (1930).' In: *AFI Catalog of Feature Films*, online: <https://catalog.afi.com/film/2558-all-quietonthewesternfront> (accessed 30 August 2023).

[s.n.]. 'Adolf Wohlbrück.' In: *The Concise CineGraph: Encyclopaedia of German Cinema*, ed. by Hans-Michael Bock and Tim Bergfelder. New York / Oxford: Berghahn Books, 2009, 537f.

[s.n.]. 'Adolf Wohlbrück.' In: *International Biography Dictionary of Central European Emigrés 1933–1945: The Arts, Sciences, and Literature* (vol. 2), ed. by Werner Schröder and Herbert A. Strauss. München [et al.]: K. G. Saur, 1983, 1201.

[s.n.]. 'Elsässische Legenda aurea.' In: *Repertorium 'Geschichtsquellen des deutschen Mittelalters'*, Bayerische Akademie der Wissenschaften, online: <https://www.geschichtsquellen.de/werk/5358> (last updated 10 September 2019; accessed 30 August 2023).

[s.n.]. 'Mysterium cosmographicum.' In: *… die Wahrheit in den Wissenschaften suchen: Buchschätze der ETH-Bibliothek aus vier Jahrhunderten*, ed. by Rudolf Mumenthaler, Wolfram Neubauer and Margit Unser. Zürich: ETH-Bibliothek, 2003, 66f.

[s.n.]. 'Nicolaus de Hanapis.' In: *Gesamtkatalog der Wiegendrucke*, vol. 16, M26421–M26459, online: <https://gesamtkatalogderwiegendrucke.de/docs/nicohan.htm> (last changed 9 May 2012, accessed 1 August 2023).

[s.n.]. 'Methodenstreit.' In: *A Dictionary of the Social Sciences*, ed. by Craig Calhoun. Oxford [et al.]: Oxford University Press, 2002, 307.

[s.n.]. 'Quo Vadis (1951).' In: *AFI Catalog of Feature Films*, online: <https://catalog.afi.com/film/50257-quo-vadis> (accessed 29 August 2023).

[s.n.]. 'The Sign of the Cross (1914).' In: *AFI Catalog of Feature Films*, online: <https://catalog.afi.com/film/16528-the-signofthecross> (accessed 29 August 2023).

[s.n.]. 'The Sign of the Cross (1932).' In: *AFI Catalog of Feature Films*, online: <https://catalog.afi.com/film/3859-the-signofthecross> (accessed 28 August 2023).

[s.n.]. 'The Soldier and the Lady (1937).' In: *AFI Catalog of Feature Films*, online: <https://catalog.afi.com/film/5918-the-soldierandthelady> (accessed 29 August 2023).

[s.n.]. 'Whiplash (2014).' In: *AFI Catalog of Feature Films*, online: <https://catalog.afi.com/film/70240-whiplash> (accessed 1 September 2023).

Betthausen, Peter [et al.]. 'Eberlein, Kurt Karl.' In: *Metzler Kunsthistoriker Lexikon*. Stuttgart: J.B. Metzler, 2007, 71–86, online: <https://doi.org/10.1007/978-3-476-05262-9_5>.

Brown, Frank Herbert. 'Griggs, William.' In: *Dictionary of National Biography* (1912 supplement), ed. by Sidney Lee. London: Smith, Elder & Co., 1912, 171f.

Buck, Julie. 'Gloria Swanson.' In: *Women Film Pioneers Project*, ed. by Jane Gaines, Radha Vatsal and Monica Dall'Asta. New York: Columbia University Libraries, 2013, online: <https://doi.org/10.7916/d8-q0za-ts47> [see also <https://wfpp.columbia.edu/pioneer/ccp-gloria-swanson/> (accessed 29 September 2023)].

Burkholder, J. Peter. 'Modelling.' In: *Grove Music Online* (2001), online: <https://doi.org/10.1093/gmo/9781561592630.article.53082> [published in print 20 January 2001, published online 2001].

Chandler, Daniel, and Rod Munday. 'Modelling Systems.' In: *A Dictionary of Media and Communication*. Oxford [et al.]: Oxford University Press, 2011, online: <https://www.oxfordreference.com/view/10.1093/oi/authority.20110803100203225>.

Fingernagel, Andreas, and Anna Zschokke. 'Smital, Ottokar.' In: *Österreichisches Biographisches Lexikon 1815–1950* (vol. 12), ed. by Eva Obermayer-Marnach. Graz [et al.]: Böhlau, 2005, 372, online: <https://doi.org/10.1553/0x00284b68>.

Frigg, Roman, and Stephan Hartmann. 'Models in Science.' In: *The Stanford Encyclopedia of Philosophy* (Spring 2020 edition), ed. by Edward N. Zalta, online: <https://plato.stanford.edu/archives/spr2020/entries/models-science/>.

Glon, Emmanuelle. 'Empathie.' In: *l'Encyclopédie philosophique* (academic version, July 2017), ed. by Maxime Kristanek, online: <http://encyclo-philo.fr/empathie-a/> (accessed 11 February 2023).

Gorodeisky, Keren. '19th Century Romantic Aesthetics.' In: *The Stanford Encyclopedia of Philosophy* (Fall 2016 edition), ed. by Edward N. Zalta, online: <https://plato.stanford.edu/archives/fall2016/entries/aesthetics-19th-romantic/>.

Grier, James. 'Editing.' In: *Grove Music Online* (2001), online: <https://doi.org/10.1093/gmo/9781561592630.article.08550> [published in print

20 January 2001, published online 2001, bibliography updated 31 January 2014].

Grimm, Jacob, and Wilhelm Grimm. 'Modell.' In: *DWB* (Deutsches Wörterbuch; vol. 12), Leipzig: Hirzel, 1885, col. 2439f., online: <http://www.woerterbuchnetz.de/DWB?lemma=modell> (accessed 7 February 2023).

Hermann, Hermann Julius. '104: 13648 [Suppl. 1072] Joachimus abbas Florensis […].' In: *Die italienischen Handschriften des Dugento und Trecento. Teil 2 – Oberitalienische Handschriften der zweiten Hälfte des 14. Jahrhunderts* (Beschreibendes Verzeichnis der illuminierten Handschriften in Österreich; vol. 5: Die illuminierten Handschriften und Inkunabeln der Nationalbibliothek in Wien). Leipzig: Hiersemann, 1929, 200–205.

Heyworth, Stephen, and Nigel Wilson. 'Indirect tradition.' In: *Brill's New Pauly*, Antiquity vols. ed. by Hubert Cancik and Helmuth Schneider, English Edition by Christine F. Salazar, Classical Tradition vols. ed. by Manfred Landfester, English Edition by Francis G. Gentry, online: <https://doi.org/10.1163/1574-9347_bnp_e524110> (accessed 26 August 2023) [first published online 2006].

Ott, Norbert H. 'Biblia pauperum (Nr. 16).' In: *Katalog der deutschsprachigen illustrierten Handschriften des Mittelalters* (vol. 2), init. by Hella Frühmorgen-Voss, cont. by Norbert H. Ott and Ulrike Bodemann. München: C. H. Beck, 1996, online: <http://kdih.badw.de/datenbank/stoffgruppe/16> (last changed 15 February 2023, accessed 11 March 2023).

Plotzek-Wederhake, Gisela, and Günter Bernt. 'Biblia pauperum.' In: *Lexikon des Mittelalters* (vol. 2). Stuttgart: Metzler, 1983, cols. 109f.

Rajadhyaksha, Ashish. 'Multilinguals.' In: *Encyclopedia of Indian Cinema*, London: British Film Institute, 1994, 15 [revised edition published by Ashish Rajadhyaksha and Paul Willemen, *Encyclopedia of Indian Cinema*, Chicago: Fitzroy Dearborn, 1999; that edition republished by London / New York: Routledge, 2012].

Schmidt, Christian Martin. 'Editionstechnik.' In: *MGG Online* (= Die Musik in Geschichte und Gegenwart), ed. by Laurenz Lütteken, Kassel [et al.]: Bärenreiter / Metzler, 2016, online: <https://www.mgg-online.com/mgg/stable/13438> [first published in print 1995, published online 2016].

Sperberg-McQueen, C. M., and David Dubin. 'Data Representation.' In: *DH Curation Guide: A Community Resource Guide to Data Curation in the Digital Humanities*, first published in 2012, online: <https://guide.dhcuration.org/contents/data-representation/> (accessed 15 September 2023).

Stang, Nicholas F. 'Kant's Transcendental Idealism.' In: *The Stanford Encyclopedia of Philosophy* (Winter 2022 edition), ed. by Edward N. Zalta and Uri Nodelman, online: <https://plato.stanford.edu/archives/win2022/entries/kant-transcendental-idealism/>.

Stueber, Karsten. 'Empathy.' In: *The Stanford Encyclopedia of Philosophy* (Fall 2019 Edition), ed. by Edward N. Zalta, online: <https://plato.stanford.edu/archives/fall2019/entries/empathy/>.

von Wartburg, Walther. 'modulus.' In: *FEW* (Französisches Etymologisches Wörterbuch; vol. 6/3: Mobilis–Myxa), Basel [et al.]: Zbinden [et al.], 1966, 14–19.

Research Literature

ARTICLES, ESSAYS

[s.n.]. "Selected Definitions from the Day of Digital Humanities: 2009–2012." In: *Defining Digital Humanities: A Reader*, ed. by Melissa Terras, Julianne Nyhan and Edward Vanhoutte. Farnham, Surrey [et al.]: Ashgate, 2013, 279–287.

Ahrens, Moritz, and Christopher Busch. "Editionsphilologie und inszenierende Typographie: Eine praxeologische Perspektive auf die Mein-Kampf-Edition des Instituts für Zeitgeschichte." In: *editio* 32/1 (2018), 119–136, online: <https://doi.org/10.1515/editio-2018-0009>.

Al-Hajj, Yahya Ahmed Ali, and Marc Wilhelm Küster. "The Text-Image-Link-Editor: A Tool for Linking Facsimiles and Transcriptions, and Image Annotations." In: *Literary and Linguistic Computing* 28/2 (2013), 190–198, online: <https://doi.org/10.1093/llc/fqs067>.

Allés Torrent, Susanna, and Alex Gil. "Minimal Editions in the Classroom: A Pedagogical Proposal." In: *Digital Humanities 2016: Conference Abstracts*, ed. by Maciej Eder and Jan Rybicki. Kraków: Jagiellonian University & Pedagogical University, 2016, 426–428.

Allington, Daniel, Sarah Brouillette and David Golumbia. "Neoliberal Tools (And Archives): A Political History of Digital Humanities." In: *Los Angeles Review of Books* (1 May 2016), online: <https://lareviewofbooks.org/article/neoliberal-tools-archives-political-history-digital-humanities/> (accessed 12 January 2023).

Alloa, Emmanuel. "Could Perspective Ever be a Symbolic Form? Revisiting Panofsky with Cassirer." In: *Journal of Aesthetics and Phenomenology* 2/1 (2015), 51–71, online: <https://doi.org/10.1080/20539320.2015.11428459>.

Alpers, Svetlana. "Einleitung." In: *Ikonographie: Neue Wege der Forschung*, ed. by Sabine Poeschel. Darmstadt: WBG, 2010, 13–30.

Alvarado, R. C. "Digital Humanities and the Great Project: Why We Should Operationalize Everything—and Study Those Who Are Doing So Now." In: *Debates in the Digital Humanities 2019*, ed. by Matthew K. Gold and Laura F. Klein. Minneapolis: University of Minnesota Press, 2019, 75–82.

Arndt, Andreas. "Hermeneutik und Einbildungskraft." In: *Friedrich Schleiermachers Hermeneutik: Interpretationen und Perspektiven*, ed. by Andreas Arndt and Jörg Dierken. Berlin / Boston: De Gruyter, 2016, 119–128.

Arnold, Taylor, and Lauren Tilton. "Distant Viewing: Analyzing Large Visual Corpora." In: *Digital Scholarship in the Humanities* 34 suppl. 1 (2019), i3–i16, online: <https://doi.org/10.1093/llc/fqz013>.

Baca, Murtha, Anne Helmreich and Melissa Gill. "Digital Art History." In: *Visual Resources* 35/1-2 (2019), 1–5.

Backhaus, Jürgen, and Reginald Hansen. "Methodenstreit in der Nationalökonomie." In: *Zeitschrift für allgemeine Wissenschaftstheorie* 31 (2000), 307–336.

Balsamo, Anne. "The Digital Humanities and Technocultural Innovation." In: *Digital Media: Technological and Social Challenges of the Interactive World*, ed. by Megan Alicia Winget and William Aspray. Lanham [et al.]: Scarecrow Press, 2011, 213–225.

Banar, Nikolay, Walter Daelemans and Mike Kestemont. "Transfer Learning for the Visual Arts: The Multi-modal Retrieval of Iconclass

Codes." In: *Journal on Computing and Cultural Heritage* 16/2 (2023), [1–16], online: <https://doi.org/10.1145/3575865>.

Bartalesi, Valentina [et al.]. "DanteSources: A Digital Library for Studying Dante Alighieri's Primary Sources." In: *Umanistica Digitale* 1/1 (2017), 119–128, online: <https://doi.org/10.6092/issn.2532-8816/7250>.

Barthes, Roland. "Éléments de Sémiologie." In: *Communications* 4 (1964), 91–135.

—. "The Death of the Author." In: *Aspen* 5+6 (1967), online: <https://www.ubu.com/aspen/aspen5and6/threeEssays.html#barthes> (accessed 12 January 2023).

Beck, Hanno. "Carl Ritter und Alexander von Humboldt – eine Polarität." In: *Carl Ritter – Geltung und Deutung: Beiträge des Symposiums anläßlich der Wiederkehr des 200. Geburtstages von Carl Ritter November 1979 in Berlin (West)*, ed. by Karl Lenz. Berlin: Reimer, 1981, 93–100.

Beck, James. "Reversibility, Fact or Fiction? The Dangers of Art Restoration." In: *Source: Notes in the History of Art* 18/3 (1999), 1–8.

Bedorf, Thomas. "Maschinenhermeneutik." In: *Von Menschen und Maschinen: Mensch-Maschine-Interaktionen in digitalen Kulturen*, ed. by Selin Gerlek [et al.]. Hagen: Hagen University Press, 2022, 16–31, online: <https://doi.org/10.57813/20220620-161525-0>.

Begley, Varun. "'Blade Runner' and the Postmodern: A Reconsideration." In: *Literature/Film Quarterly* 32/3 (2004), 186–192.

Bein, Thomas. "Die mediävistische Edition und ihre Methoden." In: *Text und Edition: Positionen und Perspektiven*, ed. by Rüdiger Nutt-Kofoth. Berlin: Erich Schmidt, 2000, 81–98.

—. "Die Multimedia-Edition und ihre Folgen." In: *editio* 24 (2010), 64–78, online: <https://doi.org/10.1515/9783110223163.0.64>.

—. "Leerstellen edieren? Überlegungen zur Einbindung von Performanz in Editionen mittelalterlicher Literatur." In: *editio* 32/1 (2018), 82–92, online: <https://doi.org/10.1515/editio-2018-0006>.

Beinsteiner, Andreas. "Für eine Phänomenologie digitaler Operativität: Zur Transformation unseres Wirklichkeitsverhältnisses im Zuge der Digitalisierung." In: *Faktum, Faktizität, Wirklichkeit: Phänomenologische Perspektiven* (Phänomenologische Forschungen; suppl. 5), ed. by Inga Römer and Georg Stenger. Hamburg: Felix Meiner, 2023, 431–454.

Bell, Peter, and Björn Ommer. "Computer Vision und Kunstgeschichte – Dialog zweier Bildwissenschaften." In: *Computing Art Reader: Einführung in die digitale Kunstgeschichte* (Computing in Art and Architecture; vol. 1), ed. by Piotr Kuroczyński, Peter Bell and Lisa Dieckmann. Heidelberg: arthistoricum.net, 2018, 60–75, online: <https://doi.org/10.11588/arthistoricum.413.c5769>.

Bender, Emily M. [et al.]. "On the Dangers of Stochastic Parrots: Can Language Models Be Too Big?" In: *FAccT '21: Proceedings of the 2021 ACM Conference on Fairness, Accountability, and Transparency*. New York: Association for Computing Machinery, 2021, 610–623, online: <https://doi.org/10.1145/3442188.3445922>.

Benjamin, Walter. "The Work of Art in the Age of Mechanical Reproduction." Transl. by Harry Zohn. In: Walter Benjamin, *Illuminations: Essays and Reflections*, ed. by Hannah Arendt. London: Penguin Random House, 2015, 211–244 [reprint; originally published in New York: Harcourt, Brace & World, 1968].

Bensmann, Felix, Benjamin Zapilko and Philipp Mayr. "Interlinking Large-Scale Library Data with Authority Records." In: *Frontiers in Digital Humanities* 4 (2017), online: <https://doi.org/10.3389/fdigh.2017.00005>.

van den Berg, Jörgen, and Gerda G. J. Duijfjes-Vellekoop. "Translating Iconclass and the Connectivity Concept of the Iconclass 2000 Browser." In: *Image and Belief: Studies in Celebration of the Eightieth Anniversary of the Index of Christian Art*, ed. by Colum Hourihane. Princeton: Princeton University Press, 1999, 291–306.

Berghahn, Klaus L. "Der Fall Heidegger." In: *The German Quarterly* 63/2 (1990), 260–275.

Berners-Lee, Tim, James Hendler and Ora Lassila. "The Semantic Web." In: *Scientific American* (17 May 2001), online: <https://www.scientificamerican.com/article/the-semantic-web/> (accessed 12 January 2023).

Bernhart, Toni. "Quantitative Literaturwissenschaft: Ein Fach mit langer Tradition?" In: *Quantitative Ansätze in Literatur- und Geisteswissenschaften: Systematische und historische Perspektiven*, ed. by Toni Bernhart [et al.]. Berlin / Boston: De Gruyter, 2018, 207–220, online: <https://doi.org/10.1515/9783110523300-009>.

—. "'As a Hobby at First': Künstlerische Produktion als Modellierung." In: *Konferenzabstracts DHd 2020*, ed. by Christof Schöch, Paderborn: University of Paderborn, 2020, 77–80.

Berry, David M. "The Computational Turn: Thinking about the Digital Humanities." In: *Culture Machine* 12 (2011), [1–22], online: <https://culturemachine.net/the-digital-humanities-beyond-computing/> (accessed 20 September 2023).

Bevan, Chris [et al.]. "Behind the Curtain of the 'Ultimate Empathy Machine': On the Composition of Virtual Reality Nonfiction Experiences." In: *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems*, ed. by Stephen Brewster and Geraldine Fitzpatrick. New York: Association for Computing Machinery, 2019, [1–12], online: <https://doi.org/10.1145/3290605.3300736>.

Beyer, Harmut, Inga Hanna Ralle and Timo Steyer. "Digitale Metamorphose: Digital Humanities und Editionswissenschaft. Tagung an der Herzog August Bibliothek Wolfenbüttel, 2.–4. November 2015." In: *editio* 30/1 (2016), 222–228, online: <https://doi.org/10.1515/editio-2016-0014>.

Bigg, Charlotte. "Diagrams." In: *A Companion to the History of Science*, ed. by Bernard Lightman. Chichester: John Wiley & Sons, 2016, 557–571.

Binder, Jeffrey M., and Collin Jennings. "Visibility and Meaning in Topic Models and 18th-Century Subject Indexes." In: *Digital Scholarship in the Humanities* 29/3 (2014), 405–411, online: <https://doi.org/10.1093/llc/fqu017>.

Blätter, Christine. "Das Modell als Medium: Wissenschaftsphilosophische Überlegungen." In: *Wissenschaft und Kunst der Modellierung: Kieler Zugang zur Definition, Nutzung und Zukunft* (Philosophische Analyse; vol. 64), ed. by Bernhard Thalheim and Ivor Nissen. Berlin / Boston: De Gruyter, 2015, 107–138, online: <https://doi.org/10.1515/9781501501234-008>.

Bod, Rens. "A Unified Model of Structural Organization in Language and Music." In: *Journal of Artificial Intelligence Research* 17 (2002), 289–308, online: <https://doi.org/10.1613/jair.1076>.

—. "Towards a General Model of Applying Science." In: *International Studies in the Philosophy of Science* 20/1 (2006), 5–25, online: <https://doi.org/10.1080/02698590600640950>.

—. "Who's Afraid of Patterns? The Particular versus the Universal and the Meaning of Humanities 3.0." In: *Low Countries Historical Review* 128/4 (2013), 171–180, online: <https://doi.org/10.18352/bmgn-lchr.9351>.

—. "Modelling in the Humanities: Linking Patterns to Principles." In: *Historical Social Research* suppl. 31 (2018), 78–95, online: <https://doi.org/10.12759/hsr.suppl.31.2018.78-95>.

Bod, Rens [et al.]. "A New Field: History of Humanities." In: *History of Humanities* 1/1 (2016), 1–8, online: <https://doi.org/10.1086/685056>.

le Boeuf, Patrick. "Musical Works in the FRBR Model or 'Quasi la Stessa Cosa': Variations on a Theme by Umberto Eco." In: *Functional Requirements for Bibliographic Records (FRBR): Hype or Cure-All?*, ed. by Patrick le Boeuf. London / New York: Routledge, 2005, 103–124.

Bogen, Steffen, and Felix Thürlemann. "Jenseits der Opposition von Text und Bild: Überlegungen zu einer Theorie des Diagramms und des Diagrammatischen." In: *Die Bildwelte der Diagramme Joachims von Fiore: Zur Medialität religiös-politischer Programme im Mittelalter*, ed. by Alexander Patschovsky. Ostfildern: Thorbecke, 2003, 1–22.

Bohn, Anna. "Edition of a Torso: Aesthetic Experience in Upheaval; Film Edition and Edition Philology." In: *Booklet DVD Metropolis Study Edition*, ed. by Anna Bohn and Enno Patalas. Berlin: Universität der Künste Berlin, 2006, 8–11.

—. "Ästhetische Erfahrung im (Um-)Bruch: Perspektiven kritischer Filmedition am Beispiel von Metropolis und Panzerkreuzer Potemkin." In: *Ästhetische Erfahrung und Edition* (editio / Beihefte; vol. 27), ed. by Rainer Falk and Gert Mattenklott. Tübingen: Max Niemeyer, 2007, 115–128, online: <https://doi.org/10.1515/9783110938845.115>.

—. "Aesthetic Experience in Upheaval: Perspectives on Critical Film Editions Based on the Example of Metropolis and Battleship Potemkin." In: *Critical Editions of Film: Film Tradition, Film Transcription in the Digital Era*, ed. by Giulio Bursi and Simone Venturini. Pasian di Prato: Campanotto Editore, 2008, 24–39.

—. "Kritische Filmedition und Kommentierung: Versuch über einen Zwischentitel aus Sergej M. Eisensteins ‚Panzerkreuzer Potemkin' (1925)." In: *Strategien der Filmanalyse – reloaded. Festschrift für Klaus Kanzog*, ed. by Michael Schaudig. München: diskurs film, 2010, 252–276..

—. "Von U-Booten, Kriegsreportern und dem Fall des Hauses Romanov: Multimediale Edition. Perspektiven der Kontextualisierung digitalisierter Filmdokumente des Ersten Weltkriegs." In: *editio* 29/1 (2015), 11–28, online: <https://doi.org/10.1515/editio-2015-003>.

—. "Filmphilologie." In: *Handbuch Filmanalyse*, ed. by Malte Hagener and Volker Pantenburg. Wiesbaden: Springer VS, 2020, 195–216.

—. "Werk-Netze Berlin Alexanderplatz: Perspektiven der Vernetzung mit Normdaten und Identifikatoren beim Online-Zugang zu Filmen." In: *Kritische Film- und Literaturedition: Perspektiven einer transdisziplinären Editionswissenschaft* (editio / Beihefte; vol. 51), ed. by Ursula von Keitz, Wolfgang Lukas and Rüdiger Nutt-Kofoth. Berlin / Boston: De Gruyter, 2022, 129–164, online: <https://doi.org/10.1515/9783110684605-008>.

Bohr, Niels. "The Solvay Meetings and the Development of Quantum Mechanics." In: *La théorie quantique des champs: Douzième Conseil de physique, tenu à l'Université libre de Bruxelles du 9 au 14 octobre 1961.* New York: Interscience Publishers, 1962, 13–36, online: <http://ladigitheque.ulb.ac.be/items/show/1078> (accessed 7 January 2023).

—. "On the Constitution of Atoms and Molecules, Part I." In: *Philosophical Magazine* 26 (1913), 1–25 [part II 'Systems Containing Only a Single Nucleus' and part III 'Systems Containing Several Nuclei' in the same issue, 476–502 and 857–875 respectively].

—. "Atomic Structure." In: *Nature* 107/2682 (1921), 104–107, online: <https://doi.org/10.1038/107104a0>.

Bonnemann, Jens. "Christian Metz (1931–1993) – die Semiotik des Films." In: id., *Filmtheorie: Eine Einführung*. Stuttgart: J.B. Metzler, 2019, 171–203, online: <https://doi.org/10.1007/978-3-476-04634-5_8>.

Brähler-Köhler, Isabell. "Von der Handschrift zum Sammelbild, vom Bilderbogen zum Comic: Die Rolandssage in mittelalterlichen und neuzeitlichen Text-Bild-Kombinationen," in: *Geschichten sehen, Bilder hören: Bildprogramme im Mittelalter. Akten der Tagung Bamberg 2013* (Bamberger interdisziplinäre Mittelalterstudien; vol. 8), ed. by Andrea Schindler and Evelyn Meyer. Bamberg: University of Bamberg Press, 2015, 49–74.

Brandhorst, Hans, and Etienne Posthumus. "Iconclass: A Key to Collaboration in the Digital Humanities." In: *The Routledge Companion to Medieval Iconography*, ed. by Colum Hourihane. London / New York: Routledge, 2017, 201–218.

Braudel, Fernand. "Histoire et Sciences sociales: La longue durée." In: *Annales: Économies, Sociétés, Civilisations* 13/4 (1958), 725–753.

—. "Pour une histoire sérielle: Séville et l'Atlantique (1504-1650)." In: *Annales: Économies, Sociétés, Civilisations* 18/3 (1963), 541–553.

Bredekamp, Horst. "Claude Lévi-Strauss und Erwin Panofsky: Wort-, Bild- und Ellipsenfragen." In: *kritische berichte* 26/2 (1998), 5–15, online: <https://doi.org/10.11588/kb.1998.2.10624>.

—. "Modelle der Kunst und der Evolution." In: *Modelle des Denkens: Streitgespräch in der Wissenschaftlichen Sitzung der Versammlung der Berlin-Brandenburgischen Akademie der Wissenschaften am 12. Dezember 2003* (BBAW-Debatte; vol. 2), ed. by Sonja Ginnow and Christiane Lahusen. Berlin: Berlin-Brandenburgische Akademie der Wissenschaften, 2005, 13–20.

Brown, David, Adriana Soto-Corominas and Juan Luis Suárez. "The Preliminaries Project: Geography, Networks, and Publication in the Spanish Golden Age." In: *Digital Scholarship in the Humanities* 32/4 (2017), 709–732, online: <https://doi.org/10.1093/llc/fqw036>.

Browner, Stephanie P., and Kenneth M. Price. "Charles Chesnutt and the Case for Hybrid Editing." In: *International Journal of Digital Humanities* 1 (2019), 165–178, online: <https://doi.org/10.1007/s42803-019-00015-7>.

Bruni, Luis E. "Sustainability, Cognitive Technologies and the Digital Semiosphere." In: *International Journal of Cultural Studies* 18/1 (2015), 103–117, online: <https://doi.org/10.1177/1367877914528121>.

Brunner, Horst. "Jacob Grimm (1785–1863)." In: *Wissenschaftsgeschichte der Germanistik in Porträts*, ed. by Christoph König, Hans-Harald Müller and Werner Röcke. Berlin / Boston: De Gruyter, 2012, 11–19.

von Bülow, Christopher. "Ein Modellfall eines schlechten Aufsatzes." In: *Erwägen, Wissen, Ethik* 26/3 (2015), 354–357.

Buchner, Michael [et al.]. "Zur Konjunktur des Zählens – oder wie man Quantifizierung quantifiziert: Eine empirische Analyse der Anwendung quantitativer Methoden in der deutschen Geschichtswissenschaft." In: *Historische Zeitschrift* 310/3 (2020), 580–621, online: <https://doi.org/10.1515/hzhz-2020-0019>.

Büttner, Frank. "Das Paradigma ‚Einfühlung' bei Robert Vischer, Heinrich Wölfflin und Wilhelm Worringer: Die problematische Karriere einer kunsttheoretischen Fragestellung." In: *200 Jahre Kunstgeschichte in München: Positionen, Perspektiven, Polemik 1780-1980* (Münchner Universitätsschriften des Instituts für Kunstgeschichte; vol. 2), ed. by Christian Drude and Hubertus Kohle. München: Deutscher Kunstverlag, 2003, 82–93.

Bundock, Michael. "Searching for the Invisible Man: The Images of Francis Barber." In: *Editing Lives: Essays in Contemporary Textual and Biographical Studies in Honor of O M Brack, Jr.*, ed. by Jesse G. Swan. Lewisburg: Bucknell University Press, 2014, 107–122.

Burney Trapp, Joseph. "Preface." In: *Hortus Deliciarum* (vol. 1: Commentary), ed. by Rosalie Green [et al.]. Leiden [et al.]: Brill, 1979, VII.

Burr, David. "Mendicant Readings of the Apocalypse." In: *The Apocalypse in the Middle Ages*, ed. by Richard Kenneth Emmerson and Bernard McGinn. Ithaca: Cornell University Press, 1992, 89–105.

Busa, Roberto. "Cybernetics and the Possibilities of a New Human Being." In: *One Origin of Digital Humanities: Fr Roberto Busa in His Own Words*, ed. by Julianne Nyhan and Marco Passarotti. Cham: Springer, 2019, 93–104 [originally published as "La Cibernetica e le possibilità dell'uomo nuovo," in: *Il Fuoco* 3 (1966), 19–33].

Busch, Hannah, Celia Krause and Philipp Vanscheidt. "Möglichkeiten der automatischen Manuskriptanalyse. Tagung an der Universität Trier, 24./25. Februar 2014." In: *editio* 28/1 (2014), 218–224, online: <https://doi.org/10.1515/editio-2014-014>.

Busch, Hannah, and Swati Chandna. "eCodicology: The Computer and the Mediaeval Library." In: *Kodikologie und Paläographie im digitalen Zeitalter 4 – Codicology and Palaeography in the Digital Age 4* (Schriften des Instituts für Dokumentologie und Editorik; vol. 11), ed. by Hannah Busch, Franz Fischer and Patrick Sahle. Norderstedt: BoD, 2017, 3–23, online: <http://nbn-resolving.de/urn:nbn:de:hbz:38-43605>.

Busch, Hannah, and Philipp Hegel. "Automatic Layout Analysis and Storage of Digitized Medieval Books." In: *Digital Philology: A Journal of Medieval Cultures* 6/2 (2017), 196–212, online: <http://doi.org/10.1353/dph.2017.0010>.

Busche, Andreas. "Just Another Form of Ideology? Ethical and Methodological Principles in Film Restoration." In: *The Moving Image: The Journal of the Association of Moving Image Archivists* 6/2 (2006), 1–29.

Buzzoni, Marina, and Eugenio Burgio. "The Italian 'Third Way' of Editing between Globalization and Localization." In: *Internationalität und Interdisziplinarität der Editionswissenschaft* (editio / Beihefte; vol. 38), ed. by Michael Stolz and Yen-Chun Chen. Berlin / Boston: De Gruyter, 2014, 179–188, online: <https://doi.org/10.1515/9783110367317.179>.

Camille, Michael. "Philological Iconoclasm: Edition and Image in the 'Vie de Saint Alexis'." In: *Medievalism and the Modernist Temper*, ed. by R. Howard Bloch and Stephen G. Nichols. Baltimore [et al.]: Johns Hopkins University Press, 1996, 371–401.

—. "Sensations of the Page: Imaging Technologies and Medieval Illuminated Manuscripts." In: *The Iconic Page in Manuscript, Print, and Digital Culture*, ed. by George Bornstein and Theresa Lynn Tinkle. Ann Arbor: University of Michigan Press, 1998, 33–54.

Cappellotto, Anna. "Digital Scholarly Editing and Text Reconstruction: Theoretical Perspectives and Practical Approaches." In: *Digital Philology: New Thoughts on Old Questions*, ed. by Adele Cipolla. Padova: libreriauniversitaria.it, 2018, 77–98.

—. "From Codex to Apps: The Medieval Manuscript in the Age of its Digital Reproduction." In: *Umanistica digitale* 4/9 (2020), 1–18, online: <https://doi.org/10.6092/issn.2532-8816/11459>.

Carter, Tim, "Lost in Translation: Rodgers and Hammerstein's Carousel on the Silver Screen." In: *The Oxford Handbook of Musical Theatre Screen Adaptations*, ed. by Dominic McHugh. Oxford [et al.]: Oxford University Press, 2019, 515–542.

Caswell, Michelle. "'The Archive' Is Not an Archives: On Acknowledging the Intellectual Contributions of Archival Studies." In: *Reconstruction: Studies in Contemporary Culture* 16/1 (2016), online: <https://escholarship.org/uc/item/7bn4v1fk> (accessed 6 January 2023).

Caviness, Madeline H. "Biblical Stories in Windows: Were They Bibles for the Poor?" In: *The Bible in the Middle Ages: Its Influence on Literature and Art* (Medieval & Renaissance texts & studies; vol. 89), ed. by Bernard S. Levy. Binghamton, New York: Medieval & Renaissance Texts & Studies, 1992, 103–147.

—. "Templates for Knowledge: Geometric Ordering of the Built Environment, Monumental Decoration, and Illuminated Page." In: *The Visualization of Knowledge in Medieval and Early Modern Europe* (Studies in the Visual Cultures of the Middle Ages; vol. 16), ed. by Marcia Kupfer, Adam S. Cohen and Jeffrey Howard Chajes. Turnhout: Brepols, 2020, 405–428.

Caviness, Madeline H., and Hiram Kümper. "An Early Eighteenth-Century Attempt to Publish a Facsimile of Two Sachsenspiegel Manuscripts." In: *Manuscripts Changing Hands*, ed. by Corine Schleif and Volker Schier. Wiesbaden: Harrassowitz, 2016, 283–351.

Cayley, Arthur. "On Plücker's Models of Certain Quartic Surfaces." In: *Proceedings of the London Mathematical Society* s1–3/1 (1869), 281–285, online: <https://doi.org/10.1112/plms/s1-3.1.281>.

Cecire, Natalie. "Introduction: Theory and the Virtues of Digital Humanities." In: *Journal of Digital Humanities* 1/1 (2011), online: <http://journalofdigitalhumanities.org/1-1/introduction-theory-and-the-virtues-of-digital-humanities-by-natalia-cecire/> (accessed 12 January 2023).

Cernuschi, Claude. "The Visualization of Temporality in the Abstract Paintings of Barnett Newman." In: *The Iconology of Abstraction: Non-figurative Images and the Modern World*, ed. by Krešimir Purgar. London / New York: Routledge, 2021, 114–125.

Chang, Han-Liang. "Is Language a Primary Modeling System? On Juri Lotman's Concept of Semiosphere." In: *Sign Systems Studies* 31/1 (2003), 9–23.

Chazelle, Celia M. "Pictures, Books, and the Illiterate: Pope Gregory I's Letters to Serenus of Marseilles." In: *Word & Image* 6/2 (1990), 138–152.

Cimiano, Philipp [et al.]. "Linguistic Linked Data in Digital Humanities." In: id., *Linguistic Linked Data*, Cham: Springer, 2020, 229–262, online: <https://doi.org/10.1007/978-3-030-30225-2_13>.

Ciotti, Fabio. "A Formal Ontology for the Text Encoding Initiative." In: *Umanistica Digitale* 3 (2018), online: <https://doi.org/10.6092/issn.2532-8816/8174>.

Ciula, Arianna, and Cristina Marras. "Circling Around Texts and Language: Towards 'Pragmatic Modelling' in Digital Humanities." In: *Digital Humanities Quarterly* 10/3 (2016), online: <http://www.digitalhumanities.org/dhq/vol/10/3/000258/000258.html> (accessed 12 February 2023).

Ciula, Arianna, and Øyvind Eide. "Modelling in Digital Humanities: Signs in Context." In: *Digital Scholarship in the Humanities* 32 suppl. 1 (2017), 33–46, online: <https://doi.org/10.1093/llc/fqw045>.

Clark, T. J. "The Conditions of Artistic Creation." In: *Times Literary Supplement* 24 (1974), 561–562 [reproduced in *Selva: A Journal of the History of Art* (2019), online: <https://selvajournal.org/article/tj-clark-conditions-of-artistic-creation/> (accessed 8 August 2023)].

Clement, Tanya E., and Daniel Carter. "Connecting Theory and Practice in Digital Humanities Information Work." In: *Journal of the Association for Information Science and Technology* 68/6 (2017), 1385–1396, online: <https://doi.org/10.1002/asi.23732>.

Clubb, Issa. "And There is a Commentary Track." In: *The Italianist* 32 (2012), 292–295.

Cohen, Adam S. "Diagramming the Diagrammatic: Twelfth-Century Europe." In: *The Visualization of Knowledge in Medieval and Early Modern Europe* (Studies in the Visual Cultures of the Middle Ages; vol. 16), ed. by Marcia Kupfer, Adam S. Cohen and Jeffrey Howard Chajes. Turnhout: Brepols, 2020, 383–404.

Conte, Pietro. "The Panofsky-Newman Controversy: Iconography and Iconology Put to the Test of 'Abstract' Art." In: *Aisthesis: Pratiche, Linguaggi E Saperi Dell'Estetico* 8/2 (2015), 87–97, online: <https://doi.org/10.13128/Aisthesis-17567>.

Costa, Antonio. "O for Original." In: *Il cinema ritrovato: Teoria e metodologia del restauro cinematografico*, ed. by Gian Luca Farinelli and Nicola Mazzanti. Bologna: Grafis, 1994, 35–40.

Cruver, Kendahl. "Baby Face." In: *Senses of Cinema* 37 (2005), online: <https://www.sensesofcinema.com/2005/cteq/baby_face/> (accessed 26 August 2023).

Cummings, James. "Opening the Book: Data Models and Distractions in Digital Scholarly Editing." In: *International Journal of Digital Humanities* 1/2 (2019), 179–193, online: <https://doi.org/10.1007/s42803-019-00016-6>.

—. "A World of Difference: Myths and Misconceptions about the TEI." In: *Digital Scholarship in the Humanities* 34 suppl. 1 (2019), i58–i79, online: <https://doi.org/10.1093/llc/fqy071>.

Curschmann, Michael. "Texte – Bilder – Strukturen: Der Hortus deliciarum und die frühmittelhochdeutsche Geistlichendichtung." In: *Deutsche Vierteljahrschrift für Literaturwissenschaft und Geistesgeschichte* 55/3 (1981), 379–418.

Curtis, Robin. "An Introduction to Einfühlung." Transl. by Richard George Elliott. In: *Art in Translation* 6/4 (2014), 353–376, online: <https://doi.org/10.1080/17561310.2014.11425535>.

Da, Nan Z. "The Digital Humanities Debacle." In: *The Chronicle Review* (27 March 2019), online: <https://www.chronicle.com/article/The-Digital-Humanities-Debacle/245986> (accessed 12 January 2023).

Dagenais, John. "Decolonizing the Medieval Page." In: *The Future of the Page*, ed. by Peter Stoicheff and Andrew Taylor. Toronto: University of Toronto Press, 2004, 37–70.

Dahlström, Mats. "Copies and Facsimiles." In: *International Journal of Digital Humanities* 1 (2019), 195–208, online: <https://doi.org/10.1007/s42803-019-00017-5>.

Dedner, Burghard. "Die Ordnung editorischer Darstellungen: Ein Vorschlag." In: *editio* 22 (2008), 60–89, online: <https://doi.org/10.1515/9783484605046.0.60>.

Dér, Katalin. "Vidularia: Outlines of a Reconstruction." In: *Classical Quarterly* 37/2 (1987), 432–443.

Derrida, Jacques. "Archive Fever: A Freudian Impression." Transl. by Eric Prenowitz. In: *Diacritics* 25/2 (1995), 9-63, online: <https://doi.org/10.2307/465144>.

Diers, Michael. "Kunst und Reproduktion: Der Hamburger Faksimile-Streit. Zum Wiederabdruck eines unbekannt gebliebenen Panofsky-Aufsatzes von 1930." In: *Idea: Jahrbuch der Hamburger Kunsthalle* 5 (1986), 125–137.

Dolezal, Mary-Lyon. "The Elusive Quest for the 'Real Thing': The Chicago Lectionary Project Thirty Years on." In: *Gesta* 35/2 (1996), 128–141.

—. "Manuscript Studies in the Twentieth Century: Kurt Weitzmann Reconsidered." In: *Byzantine and Modern Greek Studies* 22/1 (1998), 215–263.

Dombrowski, Quinn, and Patrick J. Burns. "Language is not a Default Setting: Countering Digital Humanities' English Problem." In: *Debates in Digital Humanities 2023*, ed. by Matthew K. Gold and Lauren F. Klein. Minneapolis: University of Minnesota Press, 2023, 295–304.

Dose, Ralf, and Rainer Herrn. "Verloren 1933: Bibliothek und Archiv des Instituts für Sexualwissenschaft in Berlin." In: *Jüdischer Buchbesitz als Raubgut* (Zeitschrift für Bibliothekswesen und Bibliographie; special issue 88), ed. by Regine Dehnel. Frankfurt am Main: Klostermann, 2006, 37–51.

Drubek-Meyer, Natascha, and Nikolai Izvolov. "Textkritische Editionen von Filmen auf DVD: Ein Diskussionsbeitrag." In: *Montage AV* 16/1 (2007), 183–199.

—. "Critical Editions of Films in Digital Formats." In: *Studies in Russian and Soviet Cinema* 2/2 (2008), 205–216.

Drucker, Johanna. "Modeling Interpretation." In: *Modelwork: The Material Culture of Making and Knowing*, ed. by Martin Brückner, Sandy Isenstadt, and Sarah Wasserman. Minneapolis: University of Minnesota Press, 2021, 227–254.

Drucker, Johanna [et al.]. "Digital Art History: The American Scene." In: *Perspective: Actualité en histoire de l'art* 2 (2015), [1–16], online: <https://doi.org/10.4000/perspective.6021>.

Düring, Marten, and Martin Stark. "Historical Network Analysis." In: *Encyclopedia of Social Networks* (vol. 2), ed. by George A. Barnett. London: Sage Publishing, 2011, 593–594.

Düring, Marten, and Linda von Keyserlingk. "Netzwerkanalyse in den Geschichtswissenschaften. Historische Netzwerkanalyse als Methode für die Erforschung von historischen Prozessen." In: *Prozesse: Formen, Dynamiken, Erklärungen*, ed. by Rainer Schützeichel and Stefan Jordan. Wiesbaden: Springer Fachmedien Wiesbaden, 2015, 337–350.

Duggan, Lawrence G. "Was Art Really the 'Book of the Illiterate'?" In: *Reading Images and Texts: Medieval Images and Texts as Forms of Communication. Papers from the Third Utrecht Symposium on Medieval Literacy, Utrecht, 7–9 December 2000*, ed. by Mariëlle Hageman and Marco Mostert. Turnhout: Brepols, 2005, 63–107 [originally published in *Word & Image* 5/3 (1989), 227–251].

Du Preez, Amanda. "Approaching Aby Warburg and Digital Art History: Thinking Through Images." In: *The Routledge Companion to Digital Humanities and Art History*, ed. by Kathryn Brown. London / New York: Routledge, 2020, 374–385.

Eaves, Morris. "Graphicality: Multimedia Fables for 'Textual' Critics." In: *Reimagining Textuality: Textual Studies in the Late Age of Print*, ed. by Elizabeth Bergmann Loizeaux and Neil Fraistat. Madison: University of Wisconsin Press, 2002, 99–122.

—. "Picture Problems: X-Editing Images 1992–2010." In: *Digital Humanities Quarterly* 3/3 (2009), online: <http://www.digitalhumanities.org/dhq/vol/3/3/000052/000052.html> (accessed 6 January 2023).

Eberlein, Kurt Karl. "Zur Frage: ‚Original oder Faksimilereproduktion?'" In: *Der Kreis* 6/11 (1929), 650–653, online: <https://doi.org/10.11588/diglit.56522#0748>.

Eco, Umberto. "Introduction," in: Yuri M. Lotman, *Universe of the Mind: A Semiotic Theory of Culture*, transl. by Ann Shukman. London / New York: I.B. Tauris, 1990, vii–xiii.

Edmond, Jennifer, and Jörg Lehmann. "Digital Humanities, Knowledge Complexity, and the Five 'Aporias' of Digital Research." In: *Digital Scholarship in the Humanities* 36 suppl. 2 (2021), ii95–ii108, online: <https://doi.org/10.1093/llc/fqab031>.

Effinger, Maria, Leonhard Maylein and Jakub Šimek. "Von der elektronischen Bibliothek zur innovativen Forschungsinfrastruktur: Digitale Angebote für die Geisteswissenschaften an der Universitätsbibliothek Heidelberg." In: *Bibliothek – Forschung und Praxis* 43/2 (2019), 311–323, online: <https://doi.org/10.1515/bfp-2019-2067>.

Eggert, Paul. "Text as Algorithm and as Process." In: *Text and Genre in Reconstruction: Effects of Digitalization on Ideas, Behaviours, Products and Institutions*, ed. by Willard McCarty. Cambridge: Open Book Publishers, 2010, 183–202, online: <http://books.openedition.org/obp/660> (accessed 18 February 2023).

—. "Versions and Versioning: A Critical Archive of D.H. Lawrence." In: *Archiv für das Studium der neueren Sprachen und Literatur* 254 (2017), ed. by Jens Haustein [et al.], 82–95.

—. "The Archival Impulse and the Editorial Impulse." In: *Variants* 14 (2019), 3–22, online: <https://journals.openedition.org/variants/570> (accessed 6 January 2023) [reprinted in revised form in Paul Eggert, *The Work and the Reader in Literary Studies: Scholarly Editing and Book History*, Cambridge: Cambridge University Press, 2019, as Chapter V 'Digital Editions: The Archival Impulse and the Editorial Impulse,' 80–92, online: <https://doi.org/10.1017/9781108641012.006>].

Eide, Øyvind. "Modelling and Networks in Digital Humanities." In: *Routledge International Handbook of Research Methods in Digital Humanities*, ed. by Kristen Schuster and Stuart Dunn. London / New York: Routledge, 2020, 91–108, online: <https://doi.org/10.4324/9780429777028>.

Ellis, Jack C. "The Society for Cinema Studies: A Personal Recollection of the Early Days." In: *Cinema Journal* 43/1 (2003), 105–112.

Elsaesser, Thomas. "The New Film History as Media Archaeology." In: *Cinémas: revue d'études cinématographiques / Cinémas: Journal of Film Studies* 14/2–3 (2004), 75–117, online: <https://doi.org/10.7202/026005ar>.

Embach, Michael. "Beobachtungen zur Überlieferungsgeschichte Hildegards von Bingen im späten Mittelalter und in der frühen Neuzeit. Mit einem Blick auf die Editio princeps des ‚Scivias'." In: *‚Im Angesicht Gottes suche der Mensch sich selbst': Hildegard von Bingen (1098–1179)*, ed. by Rainer Berndt. Berlin: Akademie-Verlag, 2001, 401–460.

Embach, Michael [et al.]. "eCodicology – Algorithms for the Automatic Tagging of Medieval Manuscripts." In: *The Linked TEI: Text Encoding in the Web. TEI Conference and Members Meeting 2013. Book of Abstracts*, ed. by Fabio Ciotti and Arianna Ciula. Rome: Digilab Sapienza University & TEI Consortium 2013, 172–178.

Evans, Andy [et al.]. "A Unified Superstructure for UML." In: *Journal of Object Technology* 4/1 (2005), 165–181.

Evans, Michael. "Description of the Manuscript and the Reconstruction." In: *Hortus Deliciarum* (vol: 1 Commentary), ed. by Rosalie Green [et al.]. Leiden [et al.]: Brill, 1979, 1–8.

Fafinski, Mateusz. "Facsimile Narratives: Researching the Past in the Age of Digital Reproduction." In: *Digital Scholarship in the Humanities* 37/1 (2022), 94–108, online: <https://doi.org/10.1093/llc/fqab017>.

Fantham, Elaine. "Towards a Dramatic Reconstruction of the Fourth Act of Plautus' Amphitruo." In: *Philologus* 117/1-2 (1973), 197–214.

Farinola, Augustine. "Hermeneutical Postphenomenology: Computational Tools and the Lure of Objectivity." In: *Digital Scholarship in the Humanities* 38/3 (2023), 1078–1087, online: <https://doi.org/10.1093/llc/fqac074>.

Feferman, Solomon. "Tarski's Influence on Computer Science." In: *The Lvov-Warsaw School: Past and Present* (Studies in Universal Logic), ed. by Ángel Garrido and Urszula Wybraniec-Skardowska. Cham: Birkhäuser, 2018, 391–404, online: <https://doi.org/10.1007/978-3-319-

65430-0_29> [originally published in *Logical Methods in Computer Science* 2/3 (2006), [1–13], online: <https://doi.org/10.2168/LMCS-2(3:6)2006>].

LE FEVRE GRUNDTMANN, Naja. "Digitising Aby Warburg's Mnemosyne Atlas." In: *Theory, Culture & Society* 37/5 (2020), 3–26, online: <https://doi.org/10.1177/0263276420906862>.

FICKERS, Andreas. "Towards a New Digital Historicism? Doing History in The Age of Abundance." In: *Journal of European Television History and Culture* 1/1 (2012), 19–26, online: <http://doi.org/10.18146/2213-0969.2012.jethc004>.

—. "Veins filled with the Diluted Sap of Rationality: A Critical Reply to Rens Bod." In: *Low Countries Historical Review* 128/4 (2013), 155–163, online: <https://doi.org/10.18352/bmgn-lchr.9347>.

—. "Update für die Hermeneutik: Geschichtswissenschaft auf dem Weg zur digitalen Forensik?" In: *Zeithistorische Forschungen / Studies in Contemporary History* 17/1 (2020), 157–168, online: <https://doi.org/10.14765/zzf.dok-1765>.

FINE, Arthur. "Fictionalism," in: *Midwest Studies in Philosophy* XVIII (1993), 1–18.

FISCHER, Florian. "Carnap's Logic of Science and Reference to the Present Moment." In: *Kriterion: Journal of Philosophy* 30/2 (2016), 61–90.

FISCHER, Martin. "Bedeutung und Metasprache: Alfred Tarski." In: *Abbild oder Konstruktion: Modellierungsperspektiven in der Informatik* (KIT Report; vol. 125), ed. by Martin Fischer, Gernot Grube and Fanny-Michaela Reisin. Berlin: Technische Universität, 1995, 35–40.

FISCHER, Robert. "The Criterion Collection: DVD Editions for Cinephiles." In: *Celluloid Goes Digital: Historical-Critical Editions of Films on DVD and the Internet. Proceedings of the First International Trier Conference on Film and New Media, October 2002* (Filmgeschichte International; vol. 12), ed. by Martin Loiperdinger. Trier: Wissenschaftlicher Verlag, 2003, 99–108.

FISH, Stanley. "Stop Trying to Sell the Humanities." In: *The Chronicle Review* (17 June 2018), online: <https://www.chronicle.com/article/stop-trying-to-sell-the-humanities/> (accessed 12 January 2023).

Flanders, Julia. "The Productive Unease of 21st-Century Digital Scholarship." In: *Digital Humanities Quarterly* 3/3 (2009), online: <http://www.digitalhumanities.org/dhq/vol/3/3/000055/000055.html> (accessed 12 January 2023).

Foucault, Michel. "What Is An Author?" In: *Aesthetics, Method, and Epistemology* (Essential Works of Foucault; vol. 2), ed. by James D. Faubion, transl. by Robert Hurley [et al.]. New York: The New Press, 1998, 205–222 [originally lecture given in 1969].

Frank, Manfred. "Was ist Neostrukturalismus? Derridas sprachphilosophische Grundoperation im Ausgang vom klassischen Strukturalismus." In: *Handbuch der Kulturwissenschaften* (vol. 2: Paradigmen und Disziplinen), ed. by Friedrich Jaeger and Jürgen Straub. Stuttgart: J.B. Metzler, 2011, 364–376.

Frank, Manfred [et al.]. "Aufschreibesysteme 1980/2010: In memoriam Friedrich Kittler (1943-2011)." In: *Zeitschrift für Medienwissenschaft* 6/1 (2012), 114–192, online: <https://doi.org/10.25969/mediarep/2681>.

Frank, Michael C. "Die Literaturwissenschaften und der spatial turn: Ansätze bei Jurij Lotman und Michail Bachtin." In: *Raum und Bewegung in der Literatur: Die Literaturwissenschaften und der Spatial Turn*, ed. by Wolfgang Hallet and Birgit Neumann. Bielefeld: transcript, 2009, 53–80, online: <https://doi.org/10.14361/9783839411360-003>.

Freire, Nuno [et al.]. "Cultural Heritage Metadata Aggregation Using Web Technologies: IIIF, Sitemaps and Schema.org." In: *International Journal on Digital Libraries* 21/1 (2020), 19–30, online: <https://doi.org/10.1007/s00799-018-0259-5>.

Frické, Martin. "The Knowledge Pyramid: A Critique of the DIKW Hierarchy." In: *Journal of Information Science* 35/2 (2009), 131–142.

Friebe, Cord. "Über einen Einwand gegen die Zwei-Aspekte-Interpretation von Kants Unterscheidung zwischen Erscheinung und Ding an sich." In: *Zeitschrift für philosophische Forschung* 61/2 (2007), 229–235.

Friedrich, Michael, and Cosima Schwarke. "Introduction – Manuscripts as Evolving Entities." In: *One-Volume Libraries: Composite and Multiple-Text Manuscripts*, ed. by Michael Friedrich and Cosima Schwarke. Berlin / Boston: De Gruyter, 2016, 1–26.

Frisby, David. "The Popper-Adorno Controversy: The Methodological Dispute in German Sociology." In: *Philosophy of the Social Sciences* 2/1 (1972), 105–119.

Fuchs, Robert. "The History of Chemical Reinforcement of Texts in Manuscripts: What Should We Do Now?" In: *Proceedings of the Seventh International Seminar Held at the Royal Library, Copenhagen 18th-19th April 2002* (Care and Conservation of Manuscripts; vol. 7), ed. by Gillian Fellows-Jensen and Peter Springborg. Copenhagen: Museum Tusculanum Press, 2003, 159–170.

Fujiwara, Chris. "A Tale of Two Cities." In: *Film Comment* 46/3 (2010), 54-55, online: <https://www.filmcomment.com/article/a-tale-of-two-cities-metropolis-restored/> (accessed 28 August 2023).

Fuxjäger, Anton. "Wenn Filmwissenschaftler versuchen, sich Maschinen verständlich zu machen: Zur (mangelnden) Operationalisierbarkeit des Begriffs 'Einstellung' für die Filmanalyse." In: *Maske und Kothurn* 55/3 (2009), 115–128.

Gabel, Gernot U. "Die deutsche Tradition der Bibliothèque Nationale et Universitaire de Strasbourg." In: *Bibliotheksdienst* 38/3 (2004), 319–322.

Gabler, Hans Walter. "Towards an Electronic Edition of James Joyce's Ulysses." In: *Literary and Linguistic Computing* 15/1 (2000), 115–120, online: <https://doi.org/10.1093/llc/15.1.115>.

—. "Theorizing the Digital Scholarly Edition." In: *Literature Compass* 7/2 (2010), 43–56, online: <https://doi.org/10.1111/j.1741-4113.2009.00675.x>.

—. "Thoughts on Scholarly Editing: A Review Article occasioned by Paul Eggert, Securing the Past. Conservation in Art, Architecture and Literature." In: *Journal of Literary Theory* (2011), [1–16], online: <http://www.jltonline.de/index.php/reviews/article/view/307/893> (accessed 26 February 2023), PDF: <http://www.jltonline.de/index.php/reviews/article/view/307/891> (accessed 25 August 2023).

Gallagher, Shaun. "Dilthey and Empathy." In: *Interpreting Dilthey: Critical Essays*, ed. by Eric S. Nelson. Cambridge: Cam-

bridge University Press, 2019, 145–158, online: <https://doi.org/10.1017/9781316459447.008>.

Galloway, Alexander. "The Cybernetic Hypothesis." In: *differences: A Journal of Feminist Cultural Studies* 25/1 (2014) [special issue *In the Shadows of the Digital Humanities*, ed. by Elizabeth Weed and Ellen Rooney], 107–131, online: <https://doi.org/10.1215/10407391-2420021>.

Galloway, Alexander, and Bernard Dionysius Geoghegan. "Shaky Distinctions: A Dialogue on the Digital and the Analog." In: *e-flux* 121 (2021), online: <https://www.e-flux.com/journal/121/423015/shaky-distinctions-a-dialogue-on-the-digital-and-the-analog/> (accessed 15 September 2023).

Gartner, Richard. "Towards an Ontology-Based Iconography." In: *Digital Scholarship in the Humanities* 35/1 (2020), 43–53, online: <https://doi.org/10.1093/llc/fqz009>.

Geertz, Clifford. "Thick Description: Toward an Interpretive Theory of Culture." In: id.: *The Interpretation of Cultures: Selected Essays.* New York: Basic Books, 1973, 3–30.

Gengnagel, Tessa. "The 'Beta Dilemma' – A Review of the Faust Edition." In: *RIDE* 7 (2017), online: <https://doi.org/10.18716/ride.a.7.3>.

—. "Vom Topos des Scheiterns als konstituierender Kraft: Ein Essay über Erkenntnisprozesse in den Digital Humanities." In: *Fabrikation von Erkenntnis: Experimente in den Digital Humanities* (Zeitschrift für digitale Geisteswissenschaften; special vol. 5), ed. by Manuel Burghardt [et al.]. Wolfenbüttel: Forschungsverbund MWW, 2022, online: <https://doi.org/10.17175/sb005_011>.

Gengnagel, Tessa, Frederike Neuber and Daniela Schulz. "Criteria for Reviewing the Application of FAIR Principles in Digital Scholarly Editions." Version 1.1. In: *RIDE* (2022), online: <https://ride.i-d-e.de/fair-criteria-editions/> (accessed 27 February 2023).

—. "FAIR Enough? Evaluating Digital Scholarly Editions and the Application of the FAIR Data Principles." Editorial. In: *RIDE* 16 (2023), online: <https://doi.org/10.18716/ride.a.16.0>.

Gentili, Carlo. "Kant, Nietzsche und die 'Philosophie des Als-Ob'." In: *Nietzscheforschung* 20/1 (2013), 103–116.

Geoghegan, Bernard Dionysius. "Nine Pails of Ashes: Social Networks, Genocide, and the Structuralists' Database of Language." In: *History of Anthropology Review* 45 (2021), online: <https://histanthro.org/notes/nine-pails-of-ashes/> (accessed 13 January 2023).

Gessner, Robert. "Erwin Panofsky (1892–1968)." In: *Film Comment* 4/4 (1968), 3.

Giannetti, Francesca. "Against the Grain: Reading for the Challenges of Collaborative Digital Humanities Pedagogy." In: *The Digital Humanities: Implications for Librarians, Libraries, and Librarianship*, ed. by Christopher Millson-Martula and Kevin Gunn. London / New York: Routledge, 2018, 123–135.

Giere, Ronald N. "Why Scientific Models Should Not Be Regarded as Works of Fiction." In: *Fictions in Science: Philosophical Essays on Modeling and Idealization*, ed. by Mauricio Suárez. London: Routledge, 2009, 248–258.

Gingrich, Owen. "Sacrobosco Illustrated." In: *Between Demonstration and Imagination: Essays in the History of Science and Philosophy Presented to John D. North*, ed. by Lodi Nauta and Arie Vanderjagt. Leiden [et al.]: Brill, 1999, 211–224-

Ginzburg, Carlo. "Microstoria: Due o tre cose che so di lei." In: *Quaderni storici* 29/86 (1994), 511–539.

Gius, Evelyn. "Digital Humanities as a Critical Project: The Importance and Some Problems of a Literary Criticism Perspective on Computational Approaches." Review. In: *Journal of Literary Theory* (24 January 2020), online: <http://nbn-resolving.de/urn:nbn:de:0222-004298>.

Glauch, Sonja. "Welche Lebenserwartung haben digitale Editionen?" In: *Digitale Mediävistik: Perspektiven der Digital Humanities für die Altgermanistik* (Beiträge zur mediävistischen Erzählforschung; special issue 12), ed. by Elisabeth Lienert [et al.]. Oldenbourg: BIS, 2022, 65–75, online: <https://doi.org/10.25619/BmE20223195>.

Goldman, Alvin I. "Theory of Mind." In: *The Oxford Handbook of Philosophy of Cognitive Science*, ed. by Eric Margolis, Richard Samuels and Stephen P. Stich. Oxford [et al.]: Oxford University Press, 2012, 402–424.

Gomery, Douglas. "The Images in Our Minds: Film Stills and Cinema History." In: *The Princeton University Library Chronicle* 65/3 (2004), 502–520.

Grallert, Till. "Mapping Ottoman Damascus Through News Reports: A Practical Approach." In: *Digital Humanities and Islamic & Middle East Studies*, ed. by Elias Muhanna. Berlin / Boston: De Gruyter, 2016, 171–193, online: <https://doi.org/10.1515/9783110376517-009>.

Green, Jessica. "Understanding the Score: Film Music Communicating to and Influencing the Audience." In: *The Journal of Aesthetic Education* 44/4 (2010), 81–94.

Green, Rosalie. "The Miniatures." In: *Hortus Deliciarum* (vol. 1: Commentary), ed. by Rosalie Green [et al.]. Leiden [et al.]: Brill, 1979, 17–36.

—. "Catalogue of Miniatures." In: *Hortus Deliciarum* (vol. 1: Commentary), ed. by Rosalie Green [et al.]. Leiden [et al.]: Brill, 1979, 89–228.

Greetham, David. "A History of Textual Scholarship." In: *The Cambridge Companion to Textual Scholarship*, ed. by Neil Fraistat and Julia Flanders. Cambridge: Cambridge University Press, 2013, 16–41.

Grimshaw, Mike. "Towards a Manifesto for a Critical Digital Humanities: Critiquing the Extractive Capitalism of Digital Society." In: *Palgrave Communications* 4/21 (2018), online: <https://doi.org/10.1057/s41599-018-0075-y>.

Grube, Gernot. "Modellierung in der Informatik." In: *Abbild oder Konstruktion: Modellierungsperspektiven in der Informatik* (KIT Report; vol. 125), ed. by Martin Fischer, Gernot Grube and Fanny-Michaela Reisin. Berlin: Technische Universität, 1995, 3–24.

Grundmann, Herbert. "Die Papstprophetien des Mittelalters." In: *Archiv für Kulturgeschichte* 19/1 (1928), 77–138 [reprinted in *Ausgewählte Aufsätze: Teil 2 – Joachim von Fiore* (Schriften der Monumenta Germaniae Historica; vol. 25), Stuttgart: Hiersemann, 1977, 1–57].

Guerrini, Paola. "La propaganda politica nei manoscritti illustrati." In: *La propaganda politica nel Basso Medioevo: Atti del XXXVIII Convegno storico internazionale. Todi 14–17 Ottobre 2001*. Spoleto: Centro italiano di studi sull'alto Medioevo, 2002, 561–582.

Güting, Eberhard. "Die Internationalität der neutestamentlichen Textkritik zwischen Praxis und Theorie seit Karl Lachmann." In: *Internationalität und Interdisziplinarität der Editionswissenschaft* (editio / Beihefte; vol. 38), ed. by Michael Stolz and Yen-Chun Chen. Berlin / Boston: De Gruyter, 2014, 169–178, online: <https://doi.org/10.1515/9783110367317.169>.

Guillory, John. "Monuments and Documents: Panofsky on the Object of Study in the Humanities." In: *History of Humanities* 1/1 (2016), 9–30, online: <https://doi.org/10.1086/684635>.

Gumbert, Johan Peter. "Codicological Units: Towards a Terminology for the Stratigraphy of the Non-Homogeneous Codex." In: *Il codice miscellaneo: Tipologie e funzioni. Atti del convegno internazionale (Cassino, 14–17 maggio 2003)*, ed. by Edoardo Crisci and Oronzo Pecere. Cassino: Università degli Studi di Cassino, 17–42.

Gumbrecht, Hans Ulrich. "Die ewige Krise der Geisteswissenschaften – und wo ist ein Ende in Sicht?" In: *Beiträge zur Hochschulpolitik* 4 (2015), 3–28.

Hahn, Cynthia. "Interpictoriality in the Limoges Chasses of Stephen, Martial, and Valerie." In: *Image and Belief: Studies in Celebration of the Eightieth Anniversary of the Index of Christian Art*, ed. by Colum Hourihane. Princeton: Princeton University Press, 1999, 109–124.

Haller, Mark. "Mixing Economics and Ethics: Carl Menger vs Gustav von Schmoller." In: *Social Science Information* 43/1 (2004), 5–33.

Hamburger, Jeffrey F. "Mindmapping: The Diagram as Paradigm in Medieval Art – and Beyond." In: *The Visualization of Knowledge in Medieval and Early Modern Europe* (Studies in the Visual Cultures of the Middle Ages; vol. 16), ed. by Marcia Kupfer, Adam S. Cohen and Jeffrey Howard Chajes. Turnhout: Brepols, 2020, 61–86.

Harrington, Austin. "Dilthey, Empathy and Verstehen: A Contemporary Reappraisal." In: *European Journal of Social Theory* 4/3 (2001), 311–329, online: <https://doi.org/10.1177/13684310122225145>.

Hayles, N. Katherine. "Print Is Flat, Code Is Deep: The Importance of Media-Specific Analysis." In: *Poetics Today* 25/1 (2004), 67–90.

—. "Unfinished Work: From Cyborg to Cognisphere." In: *Theory, Culture & Society* 23/7-8 (2006), 159–166, online: <https://doi.org/10.1177/0263276406069229>.

—. "Afterword: Learning to Read AI Texts." In: *Critical Inquiry* (2023) [special issue *Again Theory: A Forum on Language, Meaning, and Intent in the Time of Stochastic Parrots*, ed. by Matthew Kirschenbaum], online: <https://critinq.wordpress.com/2023/06/30/afterword-learning-to-read-ai-texts/> (accessed 24 September 2023).

Hediger, Vinzenz. "The Original is Always Lost: Film History, Copyright Industries and the Problem of Reconstruction." In: *Cinephilia: Movies, Love and Memory*, ed. by Marijke de Valck and Malte Hagener. Amsterdam: Amsterdam University Press, 2005, 135–150.

Heffernan, James A. W. "Reading Pictures." In: *PMLA* 143/1 (2019), 18–34, online: <https://doi.org/10.1632/pmla.2019.134.1.18>.

Heffner, David. "Regnum vs. Sacerdotium in a Reformation Pamphlet." In: *The Sixteenth Century Journal* 20/4 (1989), 617–630.

Heidegger, Martin. "Das Ge-Stell (1949)." In: id., *Gesamtausgabe. III. Abteilung: Unveröffentlichte Abhandlungen – Vorträge – Gedachtes* (vol. 79: Bremer und Freiburger Vorträge). Frankfurt am Main: Vittorio Klostermann, 1994, 24–45.

—. "Die Frage nach der Technik (1953)." In: id., *Gesamtausgabe. I. Abteilung: Veröffentlichte Schriften 1910–1976* (vol. 7: Vorträge und Aufsätze), Frankfurt am Main: Vittorio Klostermann, 2000, 5–36.

Heim, Michael. "The Computer as Component: Heidegger and McLuhan." In: *Philosophy and Literature* 16/2 (1992), 304–319.

Heinzer, Felix. "Diagrammatische Aspekte im ‚Hortus Deliciarum' Herrads von Hohenburg." In: *Diagramm und Text: Diagrammatische Strukturen und die Dynamisierung von Wissen und Erfahrung*, ed. by Eckard Conrad Lutz, Vera Jerjen and Christine Putzo. Wiesbaden: Reichert, 2014, 157–174.

Heinzle, Joachim. "Zur Logik mediävistischer Editionen: Einige Grundbegriffe." In: *editio* 17 (2003), 1–15, online: <https://doi.org/10.1515/9783484604544.1>.

Henry, Avril. "The Iconography of the Forty-Page Blockbooks Biblia Pauperum: Form and Meaning." In: *Blockbücher des Mittelalters: Bilderfolgen als Lektüre*, ed. by Gutenberg-Gesellschaft. Main: von Zabern, 1991, 263–288.

Heßbrüggen-Walter, Stefan. "Die Angst vor dem 'Elektronengehirn': Topoi der Kybernetik-Kritik in der bundesdeutschen Nachkriegsphilosophie." In: *Konferenzabstracts DHd 2018*, ed. by Georg Vogeler. Köln: University of Cologne, 166–168.

Herbst-Messlinger, Karin. "Zur Entstehung von F.W. Murnaus Tabu: Die Edition der Outtakes. Eine transdisziplinäre Online-Publikation der Deutschen Kinemathek." In: *Kritische Film- und Literaturedition: Perspektiven einer transdisziplinären Editionswissenschaft* (editio / Beihefte; vol. 51), ed. by Ursula von Keitz, Wolfgang Lukas and Rüdiger Nutt-Kofoth. Berlin / Boston: De Gruyter, 2022, 251–272, online: <https://doi.org/10.1515/9783110684605-013>.

Herrn, Rainer. "Magnus Hirschfelds Institut für Sexualwissenschaft und die Bücherverbrennung." In: *Verfemt und Verboten: Vorgeschichte und Folgen der Bücherverbrennungen 1933* (Wissenschaftliche Begleitbände im Rahmen der Bibliothek verbrannter Bücher; vol. 2), ed. by Julius H. Schoeps and Werner Treß. Hildesheim [et al.]: Olms, 2010, 113–168.

Hieber, Lutz. "Erwin Panofsky." In: *Handbuch Filmsoziologie*, ed. Alexander Geimer, Carsten Heinze and Rainer Winter. Wiesbaden: Springer VS, 2021, 49–67, online: <https://doi.org/10.1007/978-3-658-10729-1_10>.

Hilka, Thomas. "Zur Terminologie und Geschichte der Faksimilierung." In: *Bibliothek: Forschung und Praxis* 9/3 (1985), 290–299, online: <https://doi.org/10.1515/bfup.1985.9.3.290>.

Hinz, Berthold. "Der 'Bamberger Reiter'." In: *Das Kunstwerk zwischen Wissenschaft und Weltanschauung*, ed. by Martin Warnke. Gütersloh: Bertelsmann, 1970, 26–47.

—. "The Bamberg Horseman." Transl. by Jonathan Blower and Johanna Wild. In: *Art in Translation* 6/2 (2014), 157–179, online: <https://doi.org/10.2752/175613114X13998876655130>.

Hirsch-Reich, Beatrice. "Der Apokalypse-Kommentar des norddeutschen Minoriten Alexander." In: *Recherches de théologie ancienne et médiévale* 24 (1957), 361–364.

Hof, Barbara E. "The Cybernetic "General Model Theory": Unifying Science or Epistemic Change?" In: *Perspectives on Science* 26/1 (2018), 76–96, online: <https://doi.org/10.1162/POSC_a_00268> [green open access version available under <https://doi.org/10.5167/uzh-150926>].

Hoffmann, Kay. "Mut zur Lücke: Zur Studienfassung des Klassikers ‚Metropolis'." In: *Zeithistorische Forschungen* 4/3 (2007), 449–455, online: <https://doi.org/10.14765/zzf.dok-1888>.

Holenstein Weidmann, Pia. "Die Vaticinia pontificum: Tradition einer Bildprophetie." In: *Nova acta Paracelsica* 13 (1999), 153–184.

Hristova, Stefka. "Images As Data: Cultural Analytics and Aby Warburg's Mnemosyne." In: *International Journal for Digital Art History* 2 (2016), online: <https://doi.org/10.11588/dah.2016.2.23489>.

Hub, Berthold. "Perspektive, Symbol und symbolische Form: Zum Verhältnis Cassirer – Panofsky." In: *Estetika: The Central European Journal of Aesthetics* 47/2 (2010), 144–171, online: <http://doi.org/10.33134/eeja.69>.

Hüpper, Dagmar. "Funktionstypen der *Bilder* in den Codices picturati des Sachsenspiegels." In: *Pragmatische Schriftlichkeit im Mittelalter: Erscheinungsformen und Entwicklungsstufen*, ed. by Hagen Keller. München: Fink, 1992, 231–249.

Huggler, Max. "Der Bilderkreis in den Handschriften der Alexander-Apokalypse." In: *Antonianum* 9 (1934), 85–150 and 269–308.

van Hulle, Dirk. "Modelling a Digital Scholarly Edition for Genetic Criticism: A Rapprochement." In: *Variants* 12–13 (2016), 34–56, online: <https://doi.org/10.4000/variants.293>.

—. "Dynamic Facsimiles: Note on the Transcription of Born-Digital Works for Genetic Criticism." In: *Variants* 15–16 (2021), 231–241, online: <https://doi.org/10.4000/variants.1450>.

Hyvönen, Eero. "Using the Semantic Web in Digital Humanities: Shift from Data Publishing to Data-Analysis and Serendipitous Knowledge

Discovery." In: *Semantic Web* 11/1 (2020), 187–193, online: <https://doi.org/10.3233/SW-190386>.

Iggers, George G. "The 'Methodenstreit' in International Perspective: The Reorientation of Historical Studies at the Turn from the Nineteenth to the Twentieth Century." In: *Storia della storiografia* 6 (1984), 21–30.

Illing, Frank. "Jurij Michailovič Lotman (1922 – 1993)." In: *Klassiker der Soziologie der Künste: Prominente und bedeutende Ansätze*, ed. by Christian Steuerwald. Wiesbaden: Springer VS, 2017, 545–569, online: <https://doi.org/10.1007/978-3-658-01455-1_24>.

Isekenmeier, Guido. "In Richtung einer Theorie der Interpiktorialität." In: *Interpiktorialität: Theorie und Geschichte der Bild-Bild-Bezüge*, ed. by Guido Isekenmeier. Bielefeld: transcript-Verlag, 2013, 11–86.

Ishiguro, Hidé. "The So-Called Picture Theory: Language and the World in Tractatus Logico-Philosophicus." In: *Wittgenstein: A Critical Reader*, ed. by Hans-Johann Glock. Oxford: Blackwell, 2001, 26–46.

Jackson, Cornell. "Using Social Network Analysis to Reveal Unseen Relationships in Medieval Scotland." In: *Digital Scholarship in the Humanities* 32/2 (2017), 336–343, online: <https://doi.org/10.1093/llc/fqv070>.

Jahraus, Oliver. "Intertextualität und Editionsphilologie: Der Materialwert der Vorlagen in den Beiträgen Heinrich von Kleists für die Berliner Abendblätter." In: *editio* 13 (1999), 108–130, online: <https://doi.org/10.1515/9783484604278.108>.

Jordanova, Ludmilla. "Material Models as Visual Culture." In: *Models: The Third Dimension of Science*, ed. by Soraya de Chadarevian and Nick Hopwood. Stanford: Stanford University Press, 2004, 443–451.

Kaiser, Ulrich. "Vom Satzmodell zum Modell." In: *Zeitschrift der Gesellschaft für Musiktheorie* special issue 13 (2016), 135–153, online: <https://doi.org/10.31751/865>.

Kalavrezou, Ioli, and Courtney Tomaselli. "The Study of Byzantine Illustrated Manuscripts since Kurt Weitzmann: Art Historical Methods and Approaches." In: *A Companion to Byzantine Illustrated Manuscripts*, ed. by Vasiliki Tsamakda. Leiden [et al.]: Brill, 2017, 23–34.

Kanzog, Klaus. "Historizität und Aktualität: Semiotische Probleme des Erläuterns und Kommentierens." In: *editio* 7 (1993), 76–84, online: <https://doi.org/10.1515/9783110241983.76>.

—. "Darstellung der Filmgenese in einer kritischen Filmedition." In: *editio* 24 (2010), 215–222, online: <https://doi.org/10.1515/9783110223163.0.215>.

Katzenellenbogen, Adolf. "Illustrations in Roll and Codex: A Study of the Origin and Method of Text Illustration by Kurt Weitzmann." Review. In: *Speculum* 23/3 (1948), 513–520.

Kaup, Matthias. "Der Liber Horoscopus: Ein bildloser Übergang von der Diagrammatik zur Emblematik in der Tradition Joachims von Fiore." In: *Die Bildwelte der Diagramme Joachims von Fiore: Zur Medialität religiös-politischer Programme im Mittelalter*, ed. by Alexander Patschovsky. Ostfildern: Thorbecke, 2003, 147–184.

Keck, Sheldon. "Some Picture Cleaning Controversies: Past and Present." In: *Journal of the American Institute for Conservation* 23/2 (1984), 73–87.

von Keitz, Ursula. "Historisch-kritische Filmedition – ein interdisziplinäres Szenario." In: *editio* 27/1 (2014), 15–37, online: <https://doi.org/10.1515/editio-2013-003>.

von Keitz, Ursula [et al.]. "Kritische Film- und Literaturedition: Perspektiven einer transdisziplinären Editionswissenschaft. Internationale Tagung an der Akademie der Künste, Berlin, 17.–19. Januar 2019." In: *editio* 33/1 (2019), 173–177, online: <https://doi.org/10.1515/editio-2019-0013>.

von Keitz, Ursula, and Wolfgang Lukas. "Varianz in Literatur und Film: Ein Versuch." In: *Kritische Film- und Literaturedition: Perspektiven einer transdisziplinären Editionswissenschaft* (editio / Beihefte; vol. 51), ed. by Ursula von Keitz, Wolfgang Lukas and Rüdiger Nutt-Kofoth. Berlin / Boston: De Gruyter, 2022, 57–86, online: <https://doi.org/10.1515/9783110684605-005>.

Kelly, Andrew. "All Quiet on the Western Front: 'Brutal Cutting, Stupid Censors and Bigoted Politicos' (1930–1984)." In: *Historical Journal of Film, Radio and Television* 9/2 (1989), 135–150, online: <https://doi.org/10.1080/01439688900260121>.

Kemp, Wolfgang. "Mittelalterliche Bildsysteme." In: *Marburger Jahrbuch für Kunstwissenschaft* 22 (1989), 121–134.

Kessler, Herbert L. "Reading Ancient and Medieval Art." In: *Word & Image* 5/1 (1989), 1.

—. "Kurt Weitzmann: 1904–1993." In: *Dumbarton Oaks Papers* 47 (1993), xviii–xxiii.

Kiernan, Kevin. "Digital Facsimiles in Editing: Some Guidelines for Editors of Image-based Electronic Editions." In: *Electronic Textual Editing*, ed. by John Unsworth, Lou Burnard, and Katherine O'Brien O'Keeffe. New York: Modern Language Association, 2006, 262–268, online: <https://ebeowulf.uky.edu/kiernan/MLA-TEI/> (accessed 12 January 2023).

Killen, Andreas. "What is an Enlightenment Film? Cinema and Sexual Hygiene in Interwar Germany." In: *Social Science History* 39/1 (2015), 107–127.

Kirschenbaum, Matthew G. "What Is Digital Humanities and What's It Doing in English Departments?" In: *ADE Bulletin* 150 (2010), 55–61 [reprinted in *Defining Digital Humanities: A Reader*, ed. by Melissa Terras, Julianne Nyhan and Edward Vanhoutte, Farnham, Surrey [et al.]: Ashgate, 2013, 195–204].

Kirsh, David. "When is Information Explicitly Represented?" In: *The Vancouver Studies in Cognitive Science* (1990), 340–365.

Kitzinger, Beatrice. "Framing the Gospels, c. 1000: Iconicity, Textuality, and Knowledge." In: *The Visualization of Knowledge in Medieval and Early Modern Europe* (Studies in the Visual Cultures of the Middle Ages; vol. 16), ed. by Marcia Kupfer, Adam S. Cohen and Jeffrey Howard Chajes. Turnhout: Brepols, 2020, 87–114.

Kitzinger, Ernst. "The Cult of Images in the Age before Iconoclasm." In: *Dumbarton Oaks Papers* 8 (1954), 83–150.

—. "Kurt Weitzmann (7 March 1904–7 June 1993)." In: *Proceedings of the American Philosophical Society* 139/2 (1995), 204–209.

Kizhner, Inna [et al.]. "The History and Context of the Digital Humanities in Russia." In: *Global Debates in the Digital Humanities* (Debates

in the Digital Humanities; vol. 8), ed. by Domenico Fiormonte, Sukanta Chaudhuri and Paola Ricaurte. Minneapolis: University of Minnesota Press, 2022, 55–70, online: <https://doi.org/10.5749/9781452968919>.

Klein, Peter K. "Introduction: The Apocalypse in Medieval Art." In: *The Apocalypse in the Middle Ages*, ed. by Richard Kenneth Emmerson and Bernard McGinn. Ithaca: Cornell University Press, 1992, 159–199.

Kleinbauer, W. Eugene. "'Aedita in turribus': The Superstructure of the Early Christian Church of S. Lorenzo in Milan." In: *Essays in Honor of Sumner McKnight Crosby*, ed. by Pamela Z. Blum. New York: Center, 1976, 1–9.

Kneiper, Jürgen, and Hans-Michael Bock. "Critical DVD-Editions." In: *Critical Editions of Film: Film Tradition, Film Transcription in the Digital Era*, ed. by Giulio Bursi and Simone Venturini. Pasian di Prato: Campanotto Editore, 2008, 67–71.

Koch, Robert A. "Elijah the Prophet, Founder of the Carmelite Order." In: *Speculum* 34 (1959), 547–560.

Koeman, Cornelis. "An Increase in Facsimile Reprints." In: *Imago Mundi* 18 (1964), 87–88.

Koerner, Konrad. "Jacob Grimm's Place in the Foundation of Linguistics as a Science." In: *Word* 39/1 (1988), 1–20.

Koller, Michael. "Erich von Stroheim's Damned Queen: Queen Kelly." In: *Senses of Cinema* 78 (2007), online: <https://www.sensesofcinema.com/2007/cteq/queen-kelly/> (accessed 30 August 2023).

Kondrup, Johnny. "Text und Werk – zwei Begriffe auf dem Prüfstand." In: *editio* 27/1 (2013), 1–14, online: <https://doi.org/10.1515/editio-2013-002>.

Koolen, Marijn, Jasmijn van Gorp and Jacco van Ossenbruggen. "Toward a Model for Digital Tool Criticism: Reflection as Integrative Practice." In: *Digital Scholarship in the Humanities* 34/2 (2019), 368–385, online: <https://doi.org/10.1093/llc/fqy048>.

Kraft, Herbert. "Die Edition fragmentarischer Werke." In: *Zeitschrift für Literaturwissenschaft und Linguistik* 5/19–20 (1975), 142–146.

—. "Mehrfach besetzte Funktionspositionen als ‚Text' und die Räumlichkeit als ein Theorem der Fragmentedition." In: *Editionsphilologie*, ed. by Herbert Kraft. Darmstadt: Wissenschaftliche Buchgesellschaft, 1990, 107–124.

Kramer, Manfred. "Das Faksimile: Versuch zur Deutung eines Phänomens der modernen Buchproduktion." In: *Librarium: Zeitschrift der Schweizerischen Bibliophilen-Gesellschaft* 23/2 (1980), 82–95, issue online: <http://doi.org/10.5169/seals-388342>.

—. "Ein Faksimile ist keine Handschrift: Zur Schwierigkeit des Vergleichs von Wiedergabe und Original." In: *Librarium: Zeitschrift der Schweizerischen Bibliophilen-Gesellschaft* 29/3 (1986), 203–207, issue online: <https://doi.org/10.5169/seals-388467>.

Kranich-Hofbauer, Karin. "Zusammengesetzte Handschriften – Sammelhandschriften: Materialität – Kodikologie – Editorik." In: *Materialität in der Editionswissenschaft* (editio / Beihefte; vol. 32), ed. by Martin Schubert. Berlin / Boston: De Gruyter, 2010, 309–322, online: <https://doi.org/10.1515/9783110231311.309>.

Kraus, Kari. "Picture Criticism: Textual Studies and the Image." In: *The Cambridge Companion to Textual Scholarship*, ed. by Neil Fraistat and Julia Flanders. Cambridge: Cambridge University Press, 2013, 236–256, online: <https://doi.org/10.1017/CCO9781139044073.012>.

Krebs, Sophia Victoria. "Kritische Audio-Edition: Interdisziplinäre Fachtagung an der Bergischen Universität Wuppertal, 12.–14. Juli 2018." In: *editio* 32/1 (2018), 220–223, online: <https://doi.org/10.1515/editio-2018-0020>.

Kretzschmar, Robert. "Absichtlich erhaltene Überreste: Überlegungen zur quellenkundlichen Analyse von Archivgut." In: *Archivar* 67/3 (2014), 265–269.

Kruft, Hanno-Walter. "Rekonstruktion als Restauration? Zum Wiederaufbau zerstörter Architektur." In: *Kunstchronik* 46 (1993), 582–589.

Krumpelmann, John T. "The Genesis of Bayard Taylor's Translation of Goethe's 'Faust'." In: *The Journal of English and Germanic Philology* 42/4 (1943), 551–562.

Kunze, Konrad. "Überlieferung und Bestand der elsässischen Legenda Aurea: Ein Beitrag zur deutschsprachigen Hagiographie des 14. und 15. Jahrhunderts." In: *Zeitschrift für deutsches Altertum und deutsche Literatur* 99/4 (1970), 265–309.

Kuroczyński, Piotr. "Neuer Forschungsraum für die Kunstgeschichte: Virtuelle Forschungsumgebungen für digitale 3D-Rekonstruktionen." In: *Computing Art Reader: Einführung in die digitale Kunstgeschichte* (Computing in Art and Architecture; vol. 1), ed. by Piotr Kuroczyński, Peter Bell and Lisa Dieckmann. Heidelberg: arthistoricum.net, 2018, 160–181, online: <https://doi.org/10.11588/arthistoricum.413.c582>.

Kwakkel, Erik. "Towards a Terminology for the Analysis of Composite Manuscripts." In: *Gazette du livre médiéval* 41 (2002), 12–19.

Laszlo, Ervin. "Foreword." In: Ludwig von Bertalanffy, *Perspectives on General System Theory: Scientific-Philosophical Studies*, ed. by Edgar Taschdjian. New York: George Braziller, 1975, 8–13.

Lattmann, Claas. "Iconizing the Digital Humanities: Models and Modeling from a Semiotic Perspective." In: *Historical Social Research* suppl. 31 (2018), 124–146, online: <https://doi.org/10.12759/hsr.suppl.31.2018.124-146>.

Lauer, Gerhard. "Über den Wert der exakten Geisteswissenschaften." In: *Geisteswissenschaft – was bleibt? Zwischen Theorie, Tradition und Transformation* (Geist und Geisteswissenschaft; vol. 5), ed. by Hans Joas and Jörg Noller. Freiburg: Karl Alber, 2020, 152–173.

Leaman, George, and Gerd Simon. "Die Kant-Studien im Dritten Reich." In: *Kant-Studien* 85/4 (1994), 443–469.

Leezenberg, Michiel. "How Comparative Should a Comparative History of the Humanities Be? The Case of the Dutch Spinoza Circle." In: *The Making of the Humanities: Early Modern Europe* (The Making of the Humanities; vol. 1), ed. by Rens Bod, Jaap Maat and Thijs Weststeijn. Amsterdam: Amsterdam University Press, 2010, 17–38.

Lefèvre, Eckard. "Diphilos und Plautus: Der 'Rudens' und sein Original." In: *Abhandlungen der Geistes- und Sozialwissenschaftlichen Klasse / Akademie der Wissenschaften und Literatur* 10 (1984), 5–45.

Leff, Gordon. "Models Inherent in History." In: *The Rules of the Game: Cross-Disciplinary Essays on Models in Scholarly Thought*, ed. by

Teodor Shanin. London / New York: Routledge, 2001, 148–160 [reprint; originally published in Abingdon, Oxfordshire: Tavistock Publications, 1972].

Leon, Sharon M. "Complicating a 'Great Man' Narrative of Digital History in the United States." In: *Bodies of Information: Intersectional Feminism and Digital Humanities*, ed. by Elizabeth Losh and Jacqueline Wernimont. Minneapolis: University of Minnesota Press, 2018, 344–366.

Lerchner, Karin. "Narration im Bild: Szenische Elemente im Bildprogramm des ‚Welschen Gastes'." In: *Beweglichkeit der Bilder: Text und Imagination in den illustrierten Handschriften des ‚Welschen Gastes' von Thomasin von Zerclaere* (Pictura et poesis; vol. 15), ed. by Horst Wenzel and Christina Lechtermann. Köln [et al.]: Böhlau, 2002, 65–81.

Lerner, Robert E. "Medieval Prophecy and Religious Dissent." In: *Past & Present* 72 (1976), 3–24.

—. "Ursprung, Verbreitung und Ausstrahlung der Papstprophetien des Mittelalters." In: *Weissagungen über die Päpste. Vat. Ross. 374*, ed. by Robert E. Lerner and Robert Moynihan, transl. by Walter Simon. Zürich: Belser, 1985, 11–76 [introductory volume of the facsimile edition of Cod. Vat. Ross. 374].

—. "On the Origins of the Earliest Latin Pope Prophecies: A Reconsideration." In: *Fälschungen im Mittelalter: Teil 5 – Fingierte Briefe. Frömmigkeit und VII Fälschung. Realienfälschungen* (Schriften der Monumenta Germaniae Historica; vol. 33). Hannover 1988, 611–635.

—. "Ornithological Propaganda: The Fourteenth-Century Denigration of Dominicans." In: *Politische Reflexion in der Welt des späten Mittelalters / Political Thought in the Age of Scholasticism: Essays in Honour of Jürgen Miethke* (Studies in Medieval and Reformation Traditions; vol. 103), ed. by Martin Kaufhold. Leiden [et al.]: Brill, 2004, 171–191.

Lernout, Geert. "Continental Editorial Theory." In: *The Cambridge Companion to Textual Scholarship*, ed. by Neil Fraistat and Julia Flanders. Cambridge: Cambridge University Press, 2013, 61–78.

Levin, Thomas Y. "Iconology at the Movies: Panofsky's Film Theory." In: *The Yale Journal of Criticism* 9/1 (1996), 27–55.

Ljungberg, Christina. "Iconicity in Cognition and Communication." In: *Historical Social Research* suppl. 31 (2018), 66–77, online: <https://doi.org/10.12759/hsr.suppl.31.2018.66-77>.

Lozano, Jorge Sebastián. "Digital Art History at the Crossroads." In: *kunsttexte.de* 4 (2017), [1–14], online: <https://doi.org/10.18452/18695>.

Lubrich, Naomi. "The Wandering Hat: Iterations of the Medieval Jewish Pointed Cap." In: *Jewish History* 29/3-4 (2015), 203–244.

Lück, Heiner. "Nicolaus Hieronymus Gundling und sein ‚Rechtliches Und Vernunfft-mässiges Bedencken … von dem Schändlichen Nachdruck andern gehöriger Bücher'." In: *Grundlagen und Grundfragen des Geistigen Eigentums*, ed. by Louis Pahlow and Jens Eisfeld. Tübingen: Mohr Siebeck, 2008, 9–34.

Lukas, Wolfgang, Rüdiger Nutt-Kofoth and Madleen Podewski. "Zur Bedeutung von Materialität und Medialität für Edition und Interpretation: Eine Einführung," in: *Text – Material – Medium: Zur Relevanz editorischer Dokumentationen für die literaturwissenschaftliche Interpretation* (editio / Beihefte; vol. 37), ed. by Wolfgang Lukas, Rüdiger Nutt-Kofoth and Madleen Podewski. Berlin: De Gruyter, 2014, 1–22, online: <https://doi.org/10.1515/9783110364408.1>.

Lukasik, Stephen. "Why the Arpanet was Built." In: *IEEE Annals of the History of Computing* 33/3 (2011), 4–21.

Lvoff, Basil. "Distant Reading in Russian Formalism and Russian Formalism in Distant Reading." In: *Russian Literature* 122–123 (2021), 29–65, online: <https://doi.org/10.1016/j.ruslit.2021.07.003>.

Lyden, John C. "Whose Film is it, Anyway? Canonicity and Authority in 'Star Wars' Fandom." In: *Journal of the American Academy of Religion* 80/3 (2012), 775–786.

MacDonald, Lindsay [et al.]. "Multispectral Imaging of Degraded Parchment." In: *Computational Color Imaging: CCIW 2013* (Lecture Notes in Computer Science; vol 7786), ed. by Shoji Tominaga, Raimondo Schettini and Alain Trémeau. Berlin / Heidelberg: Springer, 2013, 143–157.

Macé, Caroline [et al.] (Eds.), "Textual Criticism and Text Editing." In: *Comparative Oriental Manuscript Studies: An Introduction*, ed. by

Alessandro Bausi [et al.]. Hamburg: Tredition, 2015, 321–466, online: <https://doi.org/10.5281/zenodo.46784>.

Mahr, Bernd. "Ein Modell des Modellseins: Ein Beitrag zur Aufklärung des Modellbegriffs." In: *Modelle*, ed. by Ulrich Dirks and Eberhard Knobloch. Frankfurt am Main [et al.]: Peter Lang, 2008, 187–220.

—. "Information Science and the Logic of Models." In: *Software & Systems Modeling* 8 (2009), 365–383, online: <https://doi.org/10.1007/s10270-009-0119-2>.

—. "On the Epistemology of Models." In: *Rethinking Epistemology* (Berlin Studies in Knowledge Research; vol. 1), ed. by Günter Abel and James Conant. Berlin / Boston: De Gruyter, 2012, 301–352, online: <https://doi.org/10.1515/9783110253573.301>.

—. "Modelle und ihre Befragbarkeit: Grundlagen einer allgemeinen Modelltheorie." In: *Erwägen, Wissen, Ethik* 26/3 (2015), 329–342.

—. "Replik." In: *Erwägen, Wissen, Ethik* 26/3 (2015), 425–433.

Makreel, Rudolf A. "How is Empathy Related to Understanding?" In: *Issues in Husserl's Ideas II* (Contributions to Phenomenology; vol. 24), ed. by Thomas Nenon and Lester Embree. Dordrecht: Springer, 1996, 199–212.

Malcolm, Aylin. "In the Orbit of the Sphere: Sacrobosco's De sphaera mundi in UPenn MS Codex 1881." In: *Manuscript Studies* 5/1 (2020), 181–202, online: <https://doi.org/10.1353/mns.2020.0012>.

Manuwald, Henrike. "Text-Bild-Beziehungen in der mittelalterlichen Manuskriptkultur (des deutschsprachigen Raums)." In: *Text – Bild – Ton: Spielarten der Intermedialität in Mittelalter und früher Neuzeit*, ed. by Joachim Hamm and Dorothea Klein. Würzburg: Königshausen & Neumann, 2021, 189–232.

Margolis, Joseph. "Knowledge in the Humanities and Social Sciences." In: *Handbook of Epistemology*, ed. by Ilkka Niiniluoto, Matti Sintonen and Jan Woleński. Dordrecht: Springer, 2004, 607–645, online: <https://doi.org/10.1007/978-1-4020-1986-9_17>.

Markus, György. "Walter Benjamin and the German 'Reproduction Debate'." In: *Moderne begreifen: Zur Paradoxie eines sozio-ästhetischen*

Deutungsmusters, ed. by Christine Magerski, Robert Savage and Christiane Weller. Wiesbaden: Deutscher Universitäts-Verlag, 2007, 351–364.

Martens, Gunter. "Das Werk als Grenze: Ein Versuch zur terminologischen Bestimmung eines editorischen Begriffs." In: *editio* 18 (2004), 175–186, online: <https://doi.org/10.1515/9783484604636.175>.

Martin, Christopher. "Night and the City: Scores by Benjamin Frankel and Franz Waxman." Review. In: *Journal of British Cinema and Television* 4/1 (2007), 203–205.

Matta, Mara. "Multilingualism and Indigenous Cinema in Northeast India: The Case of Kokborok Language Films." In: *The Multilingual Screen: New Reflections on Cinema and Linguistic Difference*, ed. by Tijana Mamula and Lisa Patti. New York [et al.]: Bloomsbury Academic, 2016, 335–350.

Mayer, Verena. "Einfühlen und Verstehen: Husserls Beitrag zur Empathie-Debatte." In: *The Philosophy of Edmund Husserl* (Logical Analysis and History of Philosophy / Philosophiegeschichte und logische Analyse; vol. 16), ed. by Uwe Meixner and Rochus Sowa. Leiden: Brill, 2013, 220–243, online: <https://doi.org/10.30965/9783897858596_013>.

McCarty, Willard. "Modelling What There Is: Ontologising in a Multidimensional World." In: *Historical Social Research* suppl. 31 (2018), 33–45, online: <https://doi.org/10.12759/hsr.suppl.31.2018.33-45>.

—. "Modeling, Ontology, and Wild Thought: Toward an Anthropology of the Artificially Intelligent." In: *Science in the Forest, Science in the Past*, ed. by Geoffrey E. R. Lloyd and Aparecida Vilaça. London: HAU Books, 2020, 209–236.

McDonald, William C. "Concerning the Use and Abuse of a Medieval Statue in Germany from 1920–1940: The Case of the Bamberger Reiter." In: *Perspicuitas: Internet-Periodicum für mediävistische Sprach-, Literatur- und Kulturwissenschaft* (2010), [1–21], online: <https://www.uni-due.de/imperia/md/content/perspicuitas/mcdonald.pdf> (accessed 27 September 2023).

McGann, Jerome J. "Rossetti's Iconic Page." In: *The Iconic Page in Manuscript, Print, and Digital Culture*, ed. by George Bornstein and Theresa Lynn Tinkle. Ann Arbor: University of Michigan Press, 1998, 123–140.

McKenzie, Lindsay. "Digital Humanities for Social Good." In: *Inside Higher Ed* (9 July 2018), online: <https://www.insidehighered.com/news/2018/07/09/when-digital-humanities-meets-activism> (accessed 12 January 2023).

McPherson, Tara. "Theory/Practice: Lessons Learned from Feminist Film Studies." In: *The Routledge Companion to Media Studies and Digital Humanities*, ed. by Jentery Sayers. London / New York: Routledge, 2018, 9–17.

Meadows, Paul. "Models, Systems and Science." In: *American Sociological Review* 22/1 (1957), 3–9.

Meier, Christel. "Malerei des Unsichtbaren: Über den Zusammenhang von Erkenntnistheorie und Bildstruktur im Mittelalter." In: *Text und Bild, Bild und Text: DFG-Symposion 1988*, ed. by Wolfgang Harms. Stuttgart: J.B. Metzler, 1990, 35–65.

—. "Bilder der Wissenschaft: Die Illustration des 'Speculum maius' von Vinzenz von Beauvais im enzyklopädischen Kontext." In: *Frühmittelalterliche Studien* 33/1 (1999), 252–286, online: <https://doi.org/10.1515/9783110242317.252>.

—. "Ecce auctor: Beiträge zur Ikonographie literarischer Urheberschaft im Mittelalter." In: *Frühmittelalterliche Studien* 34/1 (2000), 338–392, online: <https://doi.org/10.1515/9783110242324.338>.

—. "Die Quadratur des Kreises: Die Diagrammatik des 12. Jahrhunderts als symbolische Denk- und Darstellungsform." In: *Die Bildwelte der Diagramme Joachims von Fiore: Zur Medialität religiös-politischer Programme im Mittelalter*, ed. by Alexander Patschovsky. Ostfildern: Thorbecke, 2003, 23–53.

Mencken, H. L. "Philosophers as Liars." Review. In: *The American Mercury* (October 1924), 253–255.

Mermet, Rémi. "Cassirer et Panofsky: Un malentendu philosophique." In: *Labyrinth* 22/1 (2020), 56–78, online: <https://doi.org/10.25180/lj.v22i1.217>.

Messerli, Alfred. "Intermedialität." In: *Die Intermedialität des Flugblatts in der Frühen Neuzeit*, ed. by Alfred Messerli and Michael Schilling. Stuttgart: Hirzel, 2015, 9–24.

Metz, Christian. "Le cinéma: Langue ou langage?" In: *Communications* 4 (1964), 52–90.

Mihram, Danielle, and George Arthur Mihram. "Human Knowledge: The Role of Models, Metaphors, and Analogy." In: *International Journal of General Systems* 1 (1974), 41–60.

Mini, Panayiota. "Representations of the Christian Female Virtue in Roman Film Epics: The Sign of the Cross (1932) and Quo Vadis (1951)." In: *The Reception of Ancient Virtues and Vices in Modern Popular Culture: Beauty, Bravery, Blood and Glory* (Metaforms; vol. 11), ed. by Eran Almagor and Lisa Maurice. Leiden: Brill, 2017, 231–252, online: <https://doi.org/10.1163/9789004347724_011>.

Mitchell, W. J. T. "Realism, Irrealism, and Ideology: A Critique of Nelson Goodman." In: *The Journal of Aesthetic Education* 25/1 (1991), 23–35, online: <https://doi.org/10.2307/3333088>.

Mommsen, Theodor E. "Petrarch's Conception of the 'Dark Ages'." In: *Speculum* 17/2 (1942), 226–242.

Monella, Paolo. "Why Are There No Comprehensively Digital Scholarly Editions of Classical Texts?" In: *Digital Philology: New Thoughts on Old Questions*, ed. by Adele Cipolla. Padova: libreriauniversitaria.it, 2018, 141–159.

Moretti, Franco. "'Operationalizing': or, The Function of Measurement in Modern Literary Theory." In: *Pamphlets of the Stanford Literary Lab* 6 (2013), online: <https://litlab.stanford.edu/assets/pdf/LiteraryLabPamphlet6.pdf> (accessed 28 September 2023).

Moretti, Franco, and Leonardo Impett. "Totentanz: Operationalizing Aby Warburg's Pathosformeln." In: *Pamphlets of the Stanford Literary Lab* 16 (2017), online: <https://litlab.stanford.edu/assets/pdf/LiteraryLabPamphlet16.pdf> (accessed 28 September 2023).

Morley, Sheridan. "Introduction." In: Noël Coward, *Collected Plays (vol. 3): Design for Living, Cavalcade, Conversation Piece, Tonight at 8.30 (i), Still Life*, London [et al.]: Bloomsbury, 2014, vii–xvii [introduction from 1998].

Morrison, Margaret, and Mary S. Morgan. "Introduction." In: *Models as Mediators: Perspectives on Natural and Social Science*, ed. by Mary

S. Morgan and Margaret Morrison. Cambridge: Cambridge University Press, 1999, 1–9.

Morrison, Michael A. "John Barrymore's 'Hamlet' at the Haymarket Theatre, 1925." In: *New Theatre Quarterly* 7/27 (1991), 246–260.

Moxey, Keith. "Panofsky's Concept of 'Iconology' and the Problem of Interpretation in the History of Art." In: *New Literary History* 17/2 (1986), 265–274.

Müller, Kathrin. "Formen des Anfangs: Sphärendiagramme aus dem 13. Jahrhundert." In: *Diagramme und bildtextile Ordnungen* (Bildwelten des Wissens: Kunsthistorisches Jahrbuch für Bildkritik; vol. 3,1), ed. by Birgit Schneider. Berlin: Akademie-Verlag, 2005, 85–96.

Müller, Oliver. "Ge-stell und Megamaschine: Zur Genese zweier Deutungsapparaturen." In: *Mensch-Maschine-Interaktion: Handbuch zu Geschichte – Kultur – Ethik*, ed. by Kevin Liggieri and Oliver Müller. Stuttgart: J.B. Metzler, 2019, 88–94.

Müller, Roland. "Zur Geschichte des Modelldenkens und des Modellbegriffs." In: *Modelle: Konstruktion der Wirklichkeit*, ed. by Herbert Stachowiak. München: Fink, 1983, 17–86.

Mussell, Jim. "Doing and Making: History as Digital Practice." In: *History in the Digital Age*, ed. by Toni Weller. London / New York: Routledge, 2013, 79–94.

Nall, Joshua, and Liba Taub. "Three-Dimensional Models." In: *A Companion to the History of Science*, ed. by Bernard Lightman. Chichester: John Wiley & Sons, 2016, 572–586.

Neill, Iian, and Andreas Kuczera. "The Codex: An Atlas of Relations." In: *Die Modellierung des Zweifels: Schlüsselideen und -konzepte zur graphbasierten Modellierung von Unsicherheiten* (Zeitschrift für digitale Geisteswissenschaften; special issue 4), ed. by Andreas Kuczera, Thorsten Wübbena and Thomas Kollatz. Wolfenbüttel, 2019, online: <https://doi.org/10.17175/sb004_008>.

Nelson, Brent. "Virtual Paul's Cross Project: A Digital Recreation of John Donne's Gunpowder Day Sermon." Review. In: *Renaissance and Reformation / Renaissance et* Réforme 42/2 (2019), 189–194, online: <https://www.jstor.org/stable/26860676>.

Nelson, Janet L. "The Dark Ages." In: *History Workshop Journal* 63/1 (2007), 191–201, online: <https://doi.org/10.1093/hwj/dbm006>.

Newell, Sue. "Managing Knowledge and Managing Knowledge Work: What We Know and What the Future Holds." In: *Journal of Information Technology* 30/1 (2015), 1–17.

Neuber, Frederike. "Typografie und Varianz in Stefan Georges Werk: Konzeptionelle Überlegungen zu einer ‚typografiekritischen' Edition." In: *editio* 32/2 (2017), 205–232, online: <https://doi.org/10.1515/editio-2017-0012>

Neuendorf, Herbert. "Die Frage nach dem Original: Modelle 'von etwas' und 'für etwas'." In: *Erwägen, Wissen, Ethik* 26/3 (2015), 394–396.

Neuß, Wilhelm. "Die ikonographischen Wurzeln von Dürers Apokalypse." In: *Volkstum und Kulturpolitik: Sammlung von Aufsätzen, gewidmet Georg Schreiber zum 50. Geburtstage*, ed. by Heinrich Konen and Johann Peter Steffes. Köln: Gilde, 1932, 185–197.

Nichols, Stephen G. "Why Material Philology? Some Thoughts." In: *Philologie als Textwissenschaft: Alte und neue Horizonte* (Zeitschrift für deutsche Philologie, special issue; vol. 116), ed. by Helmut Tervooren and Horst Wenzel. Berlin: Erich Schmidt, 1997, 10–30.

Nissen, Ivor, and Bernhard Thalheim. "Modelle, Modellieren, Modellierung: Eine Kieler Begriffsbestimmung." In: *Wissenschaft und Kunst der Modellierung: Kieler Zugang zur Definition, Nutzung und Zukunft* (Philosophische Analyse; vol. 64), ed. by Bernhard Thalheim and Ivor Nissen. Berlin / Boston: De Gruyter, 2015, 29–36, online: <https://doi.org/10.1515/9781501501234-003>.

Nöth, Winfried. "The Topography of Yuri Lotman's Semiosphere." In: *International Journal of Cultural Studies* 18/1 (2012), 11–26, online: <https://doi.org/10.1177/1367877914528114>.

Nowviskie, Bethany. "On the Origin of 'Hack' and 'Yack'." In: *Debates in the Digital Humanities 2016*, ed. by Matthew K. Gold and Lauren F. Klein. Minneapolis: University of Minnesota Press, 2016, 66–70, online: <https://doi.org/10.5749/9781452963761> [originally published in: *Journal of Digital Humanities* 3/2 (2014), online: <http://journalofdigitalhumanities.org/3-2/on-the-origin-of-hack-and-yack-by-bethany-nowviskie/>].

Nühlen, Kathrin. "Filmskripte: Literarische Stoffe auf dem Weg zum Medium Film." In: *Aufführung und Edition* (editio / Beihefte; vol. 46), ed. by Thomas Betzwieser and Markus Schneider. Berlin / Boston: De Gruyter, 2019, 277–292, online: <https://doi.org/10.1515/9783110639261-022>.

—. "Zur Problematik der Edition von Filmskripten." In: *Kritische Film- und Literaturedition: Perspektiven einer transdisziplinären Editionswissenschaft* (editio / Beihefte; vol. 51), ed. by Ursula von Keitz, Wolfgang Lukas and Rüdiger Nutt-Kofoth. Berlin / Boston: De Gruyter, 2022, 203–222, online: <https://doi.org/10.1515/9783110684605-011>.

Nutt-Kofoth, Rüdiger. "Schreiben und Lesen: Für eine produktions- und rezeptionsorientierte Präsentation des Werktextes in der Edition." In: *Text und Edition: Positionen und Perspektiven*, ed. by Rüdiger Nutt-Kofoth [et al.]. Berlin: Erich Schmidt, 2000, 165–202.

—. "Plurimedialität, Intermedialität, Transmedialität: Theoretische, methodische und praktische Implikationen einer Text-Ton-Film-Edition von Alfred Döblins Berlin-Alexanderplatz-Werkkomplex (1929–1931)." In: *Aufführung und Edition* (editio / Beihefte; vol. 46), ed. by Thomas Betzwieser and Markus Schneider, Berlin / Boston: De Gruyter, 2019, 183–194, online: <https://doi.org/10.1515/9783110639261-015>.

—. "Textgenese analog und digital: Ziele, Standards, Probleme." In: *Textgenese in der digitalen Edition*, ed. by Anke Bosse and Walter Fanta. Berlin / Boston: De Gruyter, 2019, 1–22, online: <https://doi.org/10.1515/9783110575996-002>.

Oexle, Otto Gerhard. "Memoria als Kultur." In: *Memoria als Kultur* (Veröffentlichungen des Max-Planck-Instituts für Geschichte; vol. 121), ed. by Otto Gerhard Oexle. Göttingen: Vandenhoeck & Ruprecht, 1995, 9–78.

Ott, Norbert H. "Bildstruktur statt Textstruktur: Zur visuellen Organisation mittelalterlicher narrativer Bilderzyklen; die Beispiele des Wienhausener Tristanteppichs I, des Münchner Parzival Cgm 19 und des Münchner Tristan Cgm 51." In: *Bild und Text im Dialog*, ed. by Klaus Dirscherl. Passau: Rothe, 1993, 53–70.

—. "Mise en page: Zur ikonischen Struktur der Illustrationen von Thomasins ‚Welschem Gast'." In: *Beweglichkeit der Bilder: Text*

und Imagination in den illustrierten Handschriften des ‚Welschen Gastes' von Thomasin von Zerclaere (Pictura et poesis; vol. 15), ed. by Horst Wenzel and Christina Lechtermann. Köln [et al.]: Böhlau, 2002, 33–64.

Palmer, Nigel F. "Junius's Blockbooks: Copies of the 'Biblia pauperum' and 'Canticum canticorum' in the Bodleian Library and their Place in the History of Printing." In: *Renaissance Studies* 9/2 (1995), 137–165.

Palmer, Richard E. "A Response to Richard Wolin on Gadamer and the Nazis." In: *International Journal of Philosophical Studies* 10/4 (2002), 467–482.

Paloque-Bergès, Camille and Valérie Schafer. "Arpanet (1969–2019)." In: *Internet Histories: Digital Technology, Culture and Society* 3/1 (2019), 1–14, online: <https://doi.org/10.1080/24701475.2018.1560921>.

Palumbo, Giovanni. "Criticism and Controversy." In: *Handbook of Stemmatology: History, Methodology, Digital Approaches*, ed. by Philipp Roelli. Berlin / Boston: De Gruyter, 2020, 88–108.

Pannapacker, William. "The MLA and the Digital Humanities." In: *The Chronicle of Higher Education* (28 December 2009), online: <https://web.archive.org/web/20100102214032/http://chronicle.com/blogPost/The-MLAthe-Digital/19468/> (accessed 4 October 2020; specifically accessed in this archived version from 2 January 2010 since the link was already broken while writing this book).

—. "Digital Humanities Triumphant?" In: *The Chronicle of Higher Education* (8 January 2011), online: <http://chronicle.com/blogs/brainstorm/pannapacker-at-mla-digital-humanities-triumphant/30915> [reprinted in *Debates in the Digital Humanities*, ed. by Matthew K. Gold, Minneapolis: University of Minnesota Press, 2012, 233–234].

Panofsky, Erwin. "Die Perspektive als ‚symbolische Form'." In: *Vorträge der Bibliothek Warburg, 1924–25*, ed. by Fritz Saxl. Leipzig: Teubner, 1927, 258–330 [reprinted in *Aufsätze zu Grundfragen der Kunstwissenschaft*, ed. by Hariolf Oberer and Egon Verheyen, Berlin: Volker Spiess, 1964, 99–167].

—. "Original und Faksimilereproduktion," in: id., *Deutschsprachige Aufsätze* (Studien aus dem Warburg-Haus; vol. 1,2), ed. by Ka-

ren Michels and Martin Warnke. Berlin: Akademie-Verlag, 1998, 1078–1089 [originally published in *Der Kreis* 7 (1930), 3–16; reproduced in *Idea: Jahrbuch der Hamburger Kunsthalle* 5 (1986), 111–124].

—. "Zum Problem der Beschreibung und Inhaltsdeutung von Werken der bildenden Kunst." In: *Ikonographie und Ikonologie: Theorien, Entwicklung, Probleme* (Bildende Kunst als Zeichensystem; vol. 1), ed. by Ekkehard Kaemmerling. Köln: DuMont, 1979, 185–206 [originally published in *Logos* 21 (1932), 103–119; reprinted in *Aufsätze zu Grundfragen der Kunstwissenschaft*, ed. by Hariolf Oberer and Egon Verheyen, Berlin: Volker Spiess, 1964, 85–97].

—. "Style and Medium in the Motion Pictures." In: *Film: An Anthology*, ed. by Daniel Talbot. Berkeley: University of California Press, 1966, 15–32 [originally a presentation in 1934, revised in 1936, 1937, and, most substantially, when it was published in *Critique* 1/3 (1947), 5–28].

—. "The History of Art as a Humanistic Discipline." In: *Meaning in the Visual Arts: Papers in and on Art History by Erwin Panofsky*. New York: Doubleday Anchor Books, 1955, 1–25 [originally published as "Introductory," in *Studies in Iconology: Humanistic Themes in the Art of the Renaissance*, New York: Oxford University Press, 1939, 3–31].

—. "Iconography and Iconology: An Introduction to the Study of Renaissance Art." In: *Meaning in the Visual Arts: Papers in and on Art History by Erwin Panofsky*. New York: Doubleday Anchor Books, 1955, 26–54 [originally published as "Introductory," in: *Studies in Iconology: Humanistic Themes in the Art of the Renaissance*, New York: Oxford University Press, 1939, 3–31].

—. "Meaning in the Visual Arts," in: *Magazine of Art* 44/2 (1951), 45–50.

—. "Original and Facsimile Reproduction." Transl. by Timothy Grundy. In: *RES: Anthropology and Aesthetics* 57–58 (2010), 330–338.

—. "On the Problem of Describing and Interpreting Works of the Visual Arts." Transl. by Jaś Elsner and Katharina Lorenz. In: *Critical Inquiry* 38/3 (2012), 467–482.

Panteos, Athena, and Tim Rojek. "Einleitung." In: *Texte zur Theorie der Geisteswissenschaften*, ed. by Athena Panteos and Tim Rojek. Stuttgart: Reclam, 2016, 9–23.

Papadopoulos, Costas, and Susan Schreibman. "Towards 3D Scholarly Editions: The Battle of Mount Street Bridge." In: *Digital Humanities Quarterly* 13/1 (2019), online: <http://www.digitalhumanities.org/dhq/vol/13/1/000415/000415.html> (accessed 4 January 2023).

Pelling, Christopher. "The Urine and the Vine: Astyages' Dreams at Herodotus 1.107–8." In: *The Classical Quarterly* 46/1 (1996), 68–77.

Perkins, David. "Literary Classifications: How Have They Been Made?" In: *Theoretical Issues in Literary History* (Harvard English Studies; vol. 16), ed. by David Perkins. Cambridge, Massachusetts / London: Harvard University Press, 1991, 248–267.

Peters, Benjamin. "Normalizing Soviet Cybernetics." In: *Information & Culture* 47/2 (2012), 145–175.

Pichler, Alois, and Tone Merete Bruvik. "Digital Critical Editing: Separating Encoding from Presentation." In: *Digital Critical Editions*, ed. by Daniel Apollon, Claire Bélisle and Philippe Régnier. Urbana [et al.]: University of Illinois Press, 2014, 179–202.

Pichler, Axel, and Nils Reiter. "From Concepts to Texts and Back: Operationalization as a Core Activity of Digital Humanities." In: *Journal of Cultural Analytics* 7/4 (2022), online: <https://doi.org/10.22148/001c.57195>.

Pierazzo, Elena. "A Rationale of Digital Documentary Editions." In: *Literary and Linguistic Computing* 26/4 (2011), 463–477, online: <https://doi.org/10.1093/llc/fqr033>.

—. "Digital Documentary Editions and the Others." In: *The Annual of the Association for Documentary Editing* 35 (2014), [1–23], online: <https://scholarlyediting.org/2014/essays/essay.pierazzo.html> (accessed 18 February 2023).

—. "How Subjective is Your Model?" In: *The Shape of Data in the Digital Humanities: Modeling Texts and Text-Based Resources*, ed. by Julia Flanders and Fotis Jannidis. London / New York: Routledge, 2018, 117–132.

Pierazzo, Elena, and Peter A. Stokes. "Putting the Text back into Context: A Codicological Approach to Manuscript Transcription." In: *Kodikologie und Paläographie im digitalen Zeitalter 2 – Codicology and Palaeography in the Digital Age 2* (Schriften des Instituts für Dokumentologie und Editorik; vol. 3), ed. by Franz Fischer, Christiane Fritze and Georg Vogeler. Norderstedt: BoD, 2011, 397–429, online: <http://nbn-resolving.de/urn:nbn:de:hbz:38-43605>.

Pilcher, Lauren. "Querying Queerness in the Film Archive, the Ephemeral Anders als die Andern (Different from the Others) (1919)." In: *Synoptique* 4/1 (2015), 35–60, online: <https://www.synoptique.ca/_files/ugd/811df8_3e3a7d90f7d744b5811c246ea3772730.pdf> (accessed 25 August 2023).

Piotrowski, Michael, and Mateusz Fafinski. "Nothing New Under the Sun? Computational Humanities and the Methodology of History." In: *Proceedings of the Workshop on Computational Humanities Research*, ed. by Folgert Karsdorp [et al.]. Amsterdam, 2020, 171–181.

Pilshchikov, Igor, and Mikhail Trunin. "The Tartu-Moscow School of Semiotics: A Transnational Perspective." In: *Sign Systems Studies* 44/3 (2016), 368–401.

Plachta, Bodo. "Introduction: How International is Scholarly Editing? A Look at Its History." In: *Scholarly Editing and German Literature: Revision, Revaluation, Edition* (Amsterdamer Beiträge zur neueren Germanistik; vol. 86), ed. by Lydia Jones, Bodo Plachta, Gaby Pailer and Catherine Karen Roy. Leiden: Brill Rodopi, 2016, 1–20.

Plotke, Seraina. "Bildbuch und Emblematik." In: *Text – Bild – Ton: Spielarten der Intermedialität in Mittelalter und früher Neuzeit,* ed. by Joachim Hamm and Dorothea Klein. Würzburg: Königshausen & Neumann, 2021, 313–338.

Podnieks, Karlis. "Philosophy of Modeling: Neglected Pages of History." In: *Baltic Journal of Modern Computing* 6/3 (2018), 279–303, online: <https://doi.org/10.22364/bjmc.2018.6.3.05>.

Prange, Regine. "Stil und Medium: Panofsky 'On Movies'." In: *Erwin Panofsky: Beiträge des Symposions Hamburg 1992*, ed. by Bruno Reudenbach. Berlin: Akademie-Verlag, 1994, 171–190.

—. "Ein Zeitgenosse wider Willen: Panofskys Witz und die Ikonologie der Moderne." In: *Zeitenspiegelung: Zur Bedeutung von Traditionen in Kunst und Kunstwissenschaft. Festschrift für Konrad Hoffmann zum 60. Geburtstag am 8. Oktober 1998*, ed. by Peter K. Klein and Regine Prange. Berlin: Reimer, 1998, 331–345.

Price, Kenneth M. "Electronic Scholarly Editions." In: *A Companion to Digital Literary Studies*, ed. by Ray Siemens and Susan Schreibman. Malden [et al.]: Blackwell, 2007, 434–450.

Putzger, Antonia, and Joris Corin Heyder. "Kopieren, Faksimilieren, Dokumentieren: Vormoderne Ästhetiken der Genauigkeit in Bild und Schrift." In: *Duplikat, Abschrift & Kopie: Kulturtechniken der Vervielfältigung*, ed. by Jörg Paulus, Andrea Hübener and Fabian Winter. Köln: Böhlau, 2020, 207–232.

Ralls, Anthony. "The Uniqueness and Reproducibility of a Work of Art: A Critique of Goodman's Theory." In: *The Philosophical Quarterly* 22/86 (1972), 1–18, online: <https://doi.org/10.2307/2218587>.

Ramsay, Stephen. "Programming with Humanists." In: *Digital Humanities Pedagogy: Practices, Principles and Politics*, ed. by Brett D. Hirsch. Cambridge: Open Book Publishers, 2012, 217–240.

Ramsay, Stephen, and Geoffrey Rockwell. "Developing Things: Notes toward an Epistemology of Building in the Digital Humanities." In: *Debates in the Digital Humanities*, ed. by Matthew K. Gold. Minneapolis: University of Minnesota Press, 2012, 75–84, online: <https://doi.org/10.5749/9781452963754>.

Rapp, Andrea. "Manuelle und automatische Annotation." In: *Digital Humanities: Eine Einführung*, ed. by Fotis Jannidis, Hubertus Kohle and Malte Rehbein. Stuttgart: J.B. Metzler, 2017, 253–267.

Rapp, Friedrich. "Kybernetik und Erkenntnistheorie: Bemerkungen zur Konzeption von Georg Klaus." In: *Zeitschrift für allgemeine Wissenschaftstheorie / Journal for General Philosophy of Science* 5/2 (1974), 329–340, online: <https://www.jstor.org/stable/25170327>.

Rasmussen, Krista Stinne Greve. "Reading or Using a Digital Edition? Reader Roles in Scholarly Editions." In: *Digital Scholarly Editing: Theories and Practices*, ed. by Matthew James Driscoll and Elena Pierazzo. Cambridge: Open Book Publishers, 2016, 119–136, online: <https://doi.org/10.11647/OBP.0095>.

Reeves, Marjorie. "The Vaticinia de Summis Pontificibus: A Question of Authority." In: *Intellectual Life in the Middle Ages: Essays Presented to Margaret Gibson*, ed. by Lesley Smith and Benedicta Ward. London [et al.]: Hambledon Press, 1992, 145–156 [reprinted in Marjorie Reeves, *The Prophetic Sense of History in Medieval and Renaissance Europe* (Variorum Collected Studies; vol. 660), London / New York: Routledge, 1999, part VII, 145–156].

Reeves, Marjorie, and Beatrice Hirsch-Reich. "The Seven Seals in the Writings of Joachim of Fiore: With Special Reference to the Tract 'De Septem Sigillis'." In: *Recherches de théologie ancienne et médiévale* 21 (1954), 211–247.

Rehberg, Andreas. "Der ‚Kardinalsorakel'-Kommentar in der ‚Colonna'-Handschrift Vat.lat. 3819 und die Entstehungsumstände der Papstvatizinien." In: *Florensia: Bolletino del Centro Internazionale di Studi Gioachimiti* 5 (1991), 45–112.

—. "Ein Orakel-Kommentar vom Ende des 13. Jahrhunderts und die Entstehungsumstände der Papstvatizinien: Ein Arbeitsbericht." In: *Quellen und Forschungen aus italienischen Archiven und Bibliotheken* 71 (1991), 749–773.

Reineke, Anika. "Authentizität in der Weimarer Republik: Max Sauerlandt und der Hamburger Faksimile-Streit." In: *Authentizität und Material: Konstellationen in der Kunst seit 1900* (Outlines; vol. 11), ed. by Regula Krähenbühl and Roger Fayet. Heidelberg: arthistoricum.net, 2019, 118–131.

Reudenbach, Bruno. "Heilsgeschichtliche Sukzession und typologische Synopse in Manuskripten der Biblia pauperum." In: *Studien zur Biblia pauperum* (Vestigia bibliae; vol. 34), ed. by Hanna Wimmer, Malena Ratzke and Bruno Reudenbach. Bern [et al.]: Peter Lang, 2016, 9–30.

Richter Sherman, Claire. "ICONCLASS: A Historical Perspective." In: *Visual Resources* 4/3 (1987), 237–246, online: <https://doi.org/10.1080/01973762.1987.9659131>.

Riedl, Matthias. "Longing for the Third Age: Revolutionary Joachism, Communism, and National Socialism." In: *A Companion to Joachim of Fiore* (Brill's Companions to the Christian Tradition; vol. 75), ed. by Matthias Riedl. Leiden [et al.]: Brill, 2017, 267–318.

Riemer, Ulrike. "Domitian — (k)ein Christenverfolger?" In: *Zeitschrift für Religions- und Geistesgeschichte* 52/1 (2000), 75–80.

Rindzeviciute, Egle. "Purification and Hybridisation of Soviet Cybernetics: The Politics of Scientific Governance in an Authoritarian Regime." In: *Archiv für Sozialgeschichte* 50 (2010), 289–310.

del Rio Riande, Gimena. "Mini Lazarillo." Review. In: *Reviews in Digital Humanities* 1/4,5 (2020), online: <https://doi.org/10.21428/3e88f64f.de565313>.

Risam, Roopika. "Decolonizing Digital Humanities in Theory and Practice." In: *The Routledge Companion to Media Studies and Digital Humanities*, ed. by Jentery Sayers, London / New York: Routledge, 2018, 78–86.

Risam, Roopika, and Alex Gil. "Introduction: The Questions of Minimal Computing." In: *Digital Humanities Quarterly* 16/2 (2022), online: <http://www.digitalhumanities.org/dhq/vol/16/2/000646/000646.html> (accessed 6 January 2023).

Robinson, Peter. "Towards a Theory of Digital Editions." In: *Variants* 10 (2013), 105–131.

Röcken, Per. "Was ist – aus editorischer Sicht – Materialität? Versuch einer Explikation des Ausdrucks und einer sachlichen Klärung." In: *editio* 22 (2008), 22–46, online: <https://doi.org/10.1515/9783484605046.0.22>.

Rosenblueth, Arturo, and Norbert Wiener. "The Role of Models in Science." In: *Philosophy of Science* 12/4 (1945), 316–321.

Rushing Jr., James A. "Images at the Interface: Orality, Literacy, and the Pictorialization of the Roland Material." In: *Visual Culture and the German Middle Ages*, ed. by Kathryn Starkey and Horst Wenzel. Basingstoke [et al.]: Palgrave Macmillan, 2005, 115–134.

Sahle, Patrick. "Zwischen Mediengebundenheit und Transmedialisierung: Anmerkungen zum Verhältnis von Edition und Medien." In: *editio* 24 (2010), 23–36, online: <https://doi.org/10.1515/9783110223163.0.23>.

Sarris, Andrew. "Two or Three Things I know About Gaslight." In: *Film Comment* 12/3 (1976), 23–25.

Salarelli, Alberto. "International Image Interoperability Framework (IIIF): una panoramica." In: *JLIS.it* 8/1 (2017), 50–66, online: <https://doi.org/10.4403/jlis.it-12052>.

Salupere, Silvi. "Tartu Summer Schools of Semiotics at the Time of Juri Lotman." In: *Chinese Semiotic Studies* 6/1 (2012), 303–311, online: <https://doi.org/10.1515/css-2012-0121>.

Saxl, Fritz. "A Spiritual Encyclopaedia of the Later Middle Ages." In: *Journal of the Warburg and Courtauld Institutes* 5 (1942), 82–134 [134–142 appendices by Otto Kurz].

Schaper, Eva. "The Kantian Thing-in-Itself as a Philosophical Fiction." In: *The Philosophical Quarterly* 16/64 (1966), 233–243.

Schelbert, Georg. "Digital Art History – Digitale Kunstgeschichte: Überlegungen zum aktuellen Stand." In: *Computing Art Reader: Einführung in die digitale Kunstgeschichte* (Computing in Art and Architecture; vol. 1), ed. by Piotr Kuroczyński, Peter Bell and Lisa Dieckmann. Heidelberg: arthistoricum.net, 2018, 40–57, online: <https://doi.org/10.11588/arthistoricum.413.c5768>.

—. "Ein Modell ist ein Modell ist ein Modell: Brückenschläge in der Digitalität." In: *Der Modelle Tugend 2.0: Digitale 3D-Rekonstruktion als virtueller Raum der architekturhistorischen Forschung* (Computing in Art and Architecture; vol. 2), ed. by Piotr Kuroczyński, Mieke Pfarr-Harfst and Sander Münster. Heidelberg: arthistoricum.net, 2019, 136–153, online: <https://doi.org/10.11588/arthistoricum.515.c7449>.

Scherer, Wilhelm. "Kleinere Schriften von Karl Lachmann." In: *Kleine Schriften zur altdeutschen Philologie von Wilhelm Scherer*, ed. by Karl Burdach. Berlin: Weidmannsche Buchhandlung, 1893, 92–99 [originally published in *Preußische Jahrbücher* 38 (1876), 597–604].

Scheuermann, Leif. "Geschichte der Simulation / Simulation der Geschichte: Eine Einführung." In: *Digital Classics Online* 6/1 (2020), online: <https://doi.org/10.11588/dco.0.0.73395>.

Schleier, Hans. "Der Kulturhistoriker Karl Lamprecht, der ‚Methodenstreit' und die Folgen." In: *Karl Lamprecht: Alternative zu Ranke. Schriften zur Geschichtstheorie*, ed. by Hans Schleier. Leipzig: Reclam, 1988, 7–45.

Schlick, Moritz. "Positivismus und Realismus (1932)." In: *Wiener Kreis: Texte zur wissenschaftlichen Weltauffassung von Rudolf Carnap, Otto Neurath, Moritz Schlick, Philipp Frank, Hans Hahn, Karl Menger, Edgar Zilsel und Gustav Bergmann*, ed. by Michael Stöltzner and Thomas Uebel. Hamburg: Felix Meiner, 2006, 187–222.

Schmidt, Desmond. "Towards an Interoperable Digital Scholarly Edition." In: *Journal of the Text Encoding Initiative* 7 (2014), online: <https://doi.org/10.4000/jtei.979>.

Schmieder, Felicitas. "Die Johannesoffenbarung als Schlüssel zur Zeitgeschichte – Alexander Minoritas ‚Expositio in Apocalypsim' als Chronik." In: *Geschichte vom Ende her denken: Endzeitentwürfe und ihre Historisierung im Mittelalter* (Forum Mittelalter – Studien; vol. 15), ed. by Susanne Ehrich and Andrea Worm. Regensburg: Schnell & Steiner, 2019, 127–145.

—. "Inscribing the Orient into a Historiography of the Past, Present, and Future of Latin Europe: Alexander Minorita's Expositio in Apocalipsim." In: *Collection de l'Ecole française de Rome* 554 (2019), 253–266.

Schmolinsky, Sabine. "Merkmale der Exegese bei Alexander Minorita." In: *Neue Richtungen in der hoch- und spätmittelalterlichen Bibelexegese* (Schriften des Historischen Kollegs; vol. 32), ed. by Robert E. Lerner and Elisabeth Müller-Luckner. München: Oldenbourg, 1996, 139–148, online: <https://doi.org/10.1524/9783486595789-010>

—. "Wer wird das Himmlische Jerusalem erbauen? Interpretationen in der Apokalypsenexegese des Alexander Minorita." In: *Geschichte vom Ende her denken: Endzeitentwürfe und ihre Historisierung im Mittelalter* (Forum Mittelalter – Studien; vol. 15), ed. by Susanne Ehrich and Andrea Worm. Regensburg: Schnell & Steiner, 2019, 147–157.

Schneider, Birgit. "Mensch-Maschine-Schnittstellen in Technosphäre und Anthropozän." In: *Mensch-Maschine-Interaktion: Handbuch zu Geschichte – Kultur – Ethik*, ed. by Kevin Liggieri and Oliver Müller. Stuttgart: J.B. Metzler, 2019, 95–105.

Schöch, Christof. "Topic Modeling Genre: An Exploration of French Classical and Enlightenment Drama." In: *Digital Humanities Quarterly* 11/2 (2017), online: <http://www.digitalhumanities.org/dhq/vol/11/2/000291/000291.html> (accessed 13 January 2023).

Scholderer, Victor. "The Virtutum Vitiorumque Exempla of Nicolaus Hanapus." In: *Gutenberg-Jahrbuch* 11 (1936), 61–62.

—. "A Further Note on Nicolaus Hanapus." In: *Gutenberg-Jahrbuch* 14 (1939), 153–154.

Scholes, Robert, and Clifford Wulfman. "Humanities Computing and Digital Humanities." In: *South Atlantic Review* 73/4 (2008), 50–66.

Schrade, Torsten. "Epigraphik im digitalen Umfeld." In: *Skriptum* 1/1 (2011), 7–11.

Schreibman, Susan, and Costas Papadopoulos. "Textuality in 3D: Three-Dimensional (Re)Constructions as Digital Scholarly Editions." In: *International Journal of Digital Humanities* 1 (2019), 221–233, online: <https://doi.org/10.1007/s42803-019-00024-6>.

Schützeichel, Rainer. "Architecture as Bodily and Spatial Art: The Idea of Einfühlung in Early Theoretical Contributions by Heinrich Wölfflin and August Schmarsow." In: *Architectural Theory Review* 18/3 (2013), 293–309, online: <https://doi.org/10.1080/13264826.2014.890007>.

Schwab-Felisch, Oliver. "Umriss eines allgemeinen Begriffs des musikalischen Satzmodells." In: *Zeitschrift der Gesellschaft für Musiktheorie* 4/3 (2007), 291–304, online: <https://doi.org/10.31751/262>.

—. "Haydn, Schenker, Schönberg: Ein Beitrag zur Eklektizismusdebatte in der Musiktheorie." In: *Zeitschrift der Gesellschaft für Musiktheorie 7* [special issue] (2010), 165–196, online: <https://doi.org/10.31751/568>.

Schwartz, Orit, and Robert E. Lerner. "Illuminated Propaganda: The Origins of the 'Ascende Calve' Pope Prophecies." In: *Journal of Medieval History* 20 (1994), 157–191.

Scorcioni, Giovanni. "Distortion in Textual Object Facsimile Production: A Liability or an Asset?" In: *Textual Distortion*, ed. by Elaine Treharne and Greg Walker. Suffolk: Boydell & Brewer, 2017, 117–129, online: <https://doi.org/10.1017/9781787441538.009>.

Shillingsburg, Peter L. "A Resistence to Contemporary German Editorial Theory and Practice." In: *editio* 12 (1998), 138–150, online: <https://doi.org/10.1515/9783484604230.138>.

—. "Scholarly Editing as a Cultural Enterprise." In: id., *Textuality and Knowledge: Essays, University Park*, Pennsylvania: The Pennsylvania State University Press, 2017, 145–165.

Shumway, David R. "Nationalist Knowledges: The Humanities and Nationality." In: *Poetics Today* 19/3 (1998), 357–373.

Siemens, Ray [et al.]. "Pertinent Discussions Toward Modeling the Social Edition: Annotated Bibliographies." In: *Digital Humanities Quarterly* 6/1 (2012), online: <http://digitalhumanities.org/dhq/vol/6/1/000111/000111.html> (accessed 15 September 2023).

Šimek, Jakub. "Archiv, Prisma und Touchscreen: Zur Methode und Dienlichkeit einer neuen Text-Bild-Edition des Welschen Gastes." In: *Vom Nutzen der Editionen: Zur Bedeutung moderner Editorik für die Erforschung von Literatur- und Kulturgeschichte* (editio / Beihefte; vol. 39), ed. by Thomas Bein. Berlin: De Gruyter, 2015, 335–366.

Smith, Barry. "German Philosophy: Language and Style." In: *Topoi* 10 (1991), 155–161.

—. "The Relevance of Philosophical Ontology to Information and Computer Science." In: *Philosophy, Computing and Information Science*, ed. by Ruth Hagengruber and Uwe Riss. London / New York: Routledge, 2014, 75–83.

Smith, Jill Suzanne. "Richard Oswald and the Social Hygiene Film: Promoting Public Health or Promiscuity?" In: *The Many Faces of Weimar Cinema: Rediscovering Germany's Filmic Legacy*, ed. by Christian Rogowski. Rochester, New York: Camden House, 2010, 13–30.

Snyder, Lisa M. "Research, Process, Publication, and Pedagogy: Reconstructing the World's Columbian Exposition of 1893." In: *The Routledge Companion to Digital Humanities and Art History*, ed. by Kathryn Brown. London / New York: Routledge, 2020, 459–479.

Spadini, Elena. "Exercises in Modelling: Textual Variants." In: *International Journal of Digital Humanities* 1 (2019), 289–307, online: <https://doi.org/10.1007/s42803-019-00023-7>.

Spahr, Juliana, Richard So and Andrew Piper. "Beyond Resistance: Towards a Future History of Digital Humanities." In: *Los Angeles Review of Books* (11 May 2016), online: <https://lareviewofbooks.org/article/

beyond-resistance-towards-future-history-digital-humanities> (accessed 12 January 2023).

Spence, Paul Joseph, and Renata Brandao. "Towards Language Sensitivity and Diversity in the Digital Humanities." In: *Digital Studies/ Le champ numérique* 11/1 (2021), online: <https://doi.org/10.16995/dscn.8098>.

Sperberg-McQueen, C. M. "Playing for Keeps: The Role of Modeling in the Humanities." In: *The Shape of Data in the Digital Humanities: Modeling Texts and Text-Based Resources*, ed. by Julia Flanders and Fotis Jannidis. London / New York: Routledge, 2018, 285–310.

Spicer, Andrew. "Film Studies and the Turn to History." Review. In: *Journal of Contemporary History* 39/1 (2004), 147–155.

Spiro, Lisa. "'This Is Why We Fight': Defining the Values of the Digital Humanities." In: *Debates in the Digital Humanities*, ed. by Matthew K. Gold. Minneapolis: University of Minnesota Press, 2012, 16–35, online: <https://doi.org/10.5749/9781452963754>.

Sonesson, Göran. "On Pictorality: The Impact of the Perceptual Model in the Development of Pictorial Semiotics." In: *Advances in Visual Semiotics* (Approaches to Semiotics; vol. 118). Berlin / New York: Mouton de Gruyter, 1994, 67–108.

—. "The Foundation of Cognitive Semiotics in the Phenomenology of Signs and Meanings." In: *Intellectica* 58 (2012), 207–239.

Speidel, Björn. "Le tableau disparu." In: *Booklet DVD Metropolis Study Edition*, ed. by Anna Bohn and Enno Patalas. Berlin: Universität der Künste Berlin, 2006, 12–14.

Stachowiak, Herbert. "Models." In: *Scientific Thought: Some Underlying Concepts, Methods and Procedures* (New Babylon; vol. 9), ed. by Unesco Division of Philosophy. Paris / The Hague: Mouton, 1972, 145–166, online: <https://unesdoc.unesco.org/ark:/48223/pf0000002251> (accessed 8 February 2023).

—. "Erkenntnisstufen zum Systematischen Neopragmatismus und zur Allgemeinen Modelltheorie." In: *Modelle: Konstruktion der Wirklichkeit*, ed. by Herbert Stachowiak. München: Fink, 1983, 87–146.

Stackmann, Karl. "Die Edition – Königsweg der Philologie?" In: *Methoden und Probleme der Edition mittelalterlicher deutscher Texte* (editio / Beihefte; vol. 4), ed. by Rolf Bergmann [et al.]. Tübingen: Niemeyer, 1993, 1–18, online: <https://doi.org/10.1515/9783110941647.1>.

—. "Neue Philologie?" In: *Modernes Mittelalter: Neue Bilder einer populären Epoche*, ed. by Joachim Heinzle. Frankfurt am Main [et al.]: Insel-Verlag, 1999, 398–427.

Stäcker, Thomas. "Creating the Knowledge Site: Elektronische Editionen als Aufgabe einer Forschungsbibliothek." In: *Digitale Edition und Forschungsbibliothek: Beiträge der Fachtagung im Philosophicum der Universität Mainz am 13. und 14. Januar 2011* (Bibliothek und Wissenschaft; vol. 44), ed. by Christiane Fritze [et al.]. Wiesbaden: Harrassowitz, 2011, 107–126.

—. "Wie schreibt man Digital Humanities richtig? Überlegungen zum wissenschaftlichen Publizieren im digitalen Zeitalter." In: *Bibliotheksdienst* 47/1 (2013), 24–50, online: <https://doi.org/10.1515/bd-2013-0005>.

—. "›A Digital Edition Is Not Visible‹: Some Thoughts on the Nature and Persistence of Digital Editions." In: *Zeitschrift für digitale Geisteswissenschaften* 5 (2020), online: <https://doi.org/10.17175/2020_005>.

Steakley, James. "Film und Zensur in der Weimarer Republik: Der Fall 'Anders als die Andern'." In: *Capri* 21 (1996), 2–33.

Stegmüller, Wolfgang. "A Model Theoretic Explication of Wittgenstein's Picture Theory." In: id., *Collected Papers on Epistemology, Philosophy of Science and History of Philosophy* (vol. 1). Dordrecht: Springer, 1977, 137–155.

Stock, Wolfgang G. "Georg Klaus über Kybernetik und Information: Studien zur philosophischen Vorgeschichte von Informatik und Informationswissenschaft in der Deutschen Demokratischen Republik." In: *Studies in Soviet Thought* 38/3 (1989), 203-236, online: <https://www.jstor.org/stable/20100467>.

Stolz, Michael. "New Philology and New Phylogeny: Aspects of a Critical Electronic Edition of Wolfram's Parzival." In: *Literary and Linguistic Computing* 18/2 (2003), 139–150, online: <https://doi.org/10.1093/llc/18.2.139>.

—. "Die Aura der Autorschaft: Dichterprofile in der Manessischen Liederhandschrift." In: *Buchkultur im Mittelalter: Schrift – Bild – Kommunikation*, ed. by Michael Stolz and Adrian Mettauer. Berlin: De Gruyter, 2005, 67–99.

Stueber, Karsten. "Understanding Versus Explanation? How to Think about the Distinction between the Human and the Natural Sciences." In: *Inquiry* 55/1 (2012), 17–34, online: <https://doi.org/10.1080/0020174X.2012.643621>.

Suárez, Mauricio. "Fictions in Scientific Practice." In: *Fictions in Science: Philosophical Essays on Modeling and Idealization*, ed. by Mauricio Suárez. London: Routledge, 2009, 3–18.

Süselbeck, Jan. "Die Chiffre der planetarischen Technik: Keine Stunde Null in Todtnauberg. Soziologische Studien helfen dabei, die antisemitischen Symbole der ‚Seyns'-Philosophie Martin Heideggers zu entschlüsseln." In: *literaturkritik.de* 6 (2015), online: <https://literaturkritik.de/id/20648> (accessed 24 September 2023).

Sutherland, Kathryn. "Anglo-American Editorial Theory." In: *The Cambridge Companion to Textual Scholarship*, ed. by Neil Fraistat and Julia Flanders. Cambridge: Cambridge University Press, 2013, 42–60.

Sutherland, Kathryn, and Elena Pierazzo. "The Author's Hand: From Page to Screen." In: *Collaborative Research in the Digital Humanities*, ed. by Willard McCarty and Marilyn Deegan. London / New York: Routledge, 2012, 191–212.

Svenaeus, Fredrik. "Edith Stein's Phenomenology of Sensual and Emotional Empathy." In: *Phenomenology and the Cognitive Sciences* 17 (2018), 741–760.

Svensson, Patrick. "Beyond the Big Tent." In: *Debates in the Digital Humanities*, ed. by Matthew K. Gold. Minneapolis: University of Minnesota Press, 2012, 36–49.

Tamm, Marek. "Introduction: Juri Lotman's Semiotic Theory of History and Cultural Memory." In: *Juri Lotman – Culture, Memory and History: Essays in Cultural Semiotics. Translated from the Russian by Brian James Baer*, ed. by Marek Tamm. London: Palgrave Macmillan, 2019, 1–26.

Tekoniemi, Timo. "Editorial In(ter)ventions: Comparing the Editorial Processes of the Hebrew Bible and the Star Wars Saga." In: *Journal of Religion & Film* 22/1 (2018), article 37, [1–30], online: <https://digitalcommons.unomaha.edu/jrf/vol22/iss1/37> (accessed 30 August 2023).

Terras, Melissa. "Peering Inside the Big Tent." In: *Defining Digital Humanities: A Reader*, ed. by Melissa Terras, Julianne Nyhan and Edward Vanhoutte. Farnham, Surrey [et al.]: Ashgate, 2013, 263–270.

Thalheim, Bernhard. "The Theory of Conceptual Models, the Theory of Conceptual Modelling and Foundations of Conceptual Modelling." In: *Handbook of Conceptual Modeling: Theory, Practice, and Research Challenges*, ed. by David W. Embley and Bernhard Thalheim. Berlin [et al.]: Springer, 2011, 543–577.

Thaller, Manfred. "Ungefähre Exaktheit: Theoretische Grundlagen und praktische Möglichkeiten einer Formulierung historischer Quellen als Produkte ‚unscharfer' Systeme." In: *Historical Social Research* suppl. 29 (2017), 138–159, online: <https://doi.org/10.12759/hsr.suppl.29.2017.138-159> [originally published in: *Neue Ansätze in der Geschichtswissenschaft: Eine philosophisch-historische Tagung* (Conceptus-Studien; vol. 1), ed. by Herta Nagl-Docekal and Franz Wimmer, Wien: VWGÖ, 1984, 77–100].

—. "Entzauberungen: Die Entwicklung einer fachspezifischen historischen Datenverarbeitung in der Bundesrepublik." In: *Historical Social Research* suppl. 29 (2017), 178–192, online: <https://doi.org/10.12759/hsr.suppl.29.2017.178-192> [originally published in *Die sogenannten Geisteswissenschaften: Innenansichten*, ed. by Wolfgang Prinz and Peter Weingart, Frankfurt am Main: Suhrkamp, 1990, 138–160].

—. "Von der Mißverständlichkeit des Selbstverständlichen: Beobachtungen zur Diskussion über die Nützlichkeit formaler Verfahren in der Geschichtswissenschaft." In: *Historical Social Research* suppl. 29 (2017), 221–242, online: <https://doi.org/10.12759/hsr.suppl.29.2017.221-242> [originally published in *Frühe Neuzeit – Frühe Moderne: Forschungen zur Vielschichtigkeit von Übergangsprozessen* (Veröffentlichungen des MPI zur Erforschung multireligiöser und multiethnischer Gesellschaften; vol. 104), ed.

by Rudolf Vierhaus [et al.], Göttingen: Vandenhoeck & Ruprecht, 1992, 443–67].

van Thiel, P. J. J. "Beschadiging en herstel van Rembrandts Nachtwacht / The Damaging and Restoration of Rembrandt's Night Watch." In: *Bulletin van het Rijksmuseum* 24/1-2 (1976), 4–13.

Thomas, Michael. "Zur kulturgeschichtlichen Einordnung der Armenbibel mit ‚Speculum humanae salvationis' unter Berücksichtigung einer Darstellung des ‚Liber Figurarum' in der Joachim de Fiore-Handschrift der Sächsischen Landesbibliothek Dresden (Mscr. Dresden A 121)." In: *Archiv für Kulturgeschichte* 52/2 (1970), 192–225.

Thorne, J. P. "George Lakoff and Mark Johnson, Metaphors We live By – Dwight Bolinger, Language the Loaded Weapon." Review. In: *Journal of Linguistics* 19/1 (1983), 245–248.

Tiwald, Justin. "Zhu Xi on Self-Focused vs. Other-Focused Empathy." In: *Dao Companion to Zhu Xi's Philosophy*, ed. by Kai-Chiu Ng and Yong Huang. Dordrecht: Springer, 2020, 963–980.

Togneri, Carol. "Iconclass and its Application to Primary Documents." In: *Image and Belief: Studies in Celebration of the Eightieth Anniversary of the Index of Christian Art*, ed. by Colum Hourihane. Princeton: Princeton University Press, 1999, 259–270.

Tomasi, Francesca. "Modelling in the Digital Humanities: Conceptual Data Models and Knowledge Organization in the Cultural Heritage Domain." In: *Historical Social Research* suppl. 31 (2018), 170–179, online: <https://doi.org/10.12759/hsr.suppl.31.2018.170-179>.

Topper, David. "On the Fidelity of Pictures: A Critique of Goodman's Disjunction of Perspective and Realism." In: *Philosophia* 14 (1984), 187–98, online: <https://doi.org/10.1007/BF02378969>.

Trivedi, Poonam, and Paromita Chakravarti. "Introduction." In: *Shakespeare and Indian Cinemas: 'Local Habitations'*, ed. by Poonam Trivedi and Paromita Chakravarti. London / New York: Routledge, 2019, 1–20.

Trovato, Paolo. "What if Bédier was Mistaken? Reflections of an Unrepetant Neo-Lachmannian." In: *Digital Philology: New Thoughts on*

Old Questions, ed. by Adele Cipolla. Padova: libreriauniversitaria.it, 2018, 161–180.

Uchill, Rebecca. "Original und Reproduktion: Alexander Dorner and the (Re)production of Art Experience." In: *Future Interior: Journal of Historic Preservation, History, Theory, and Criticism* 12/2 (2015), 13–37.

Underwood, Ted. "Dear Humanists: Fear Not the Digital Revolution." In: *The Chronicle Review* (27 March 2019), online: <https://www.chronicle.com/article/Dear-Humanists-Fear-Not-the/245987> (accessed 12 January 2023).

Unsworth, John. "Documenting the Reinvention of Text: The Importance of Failure." In: *Journal of Electronic Publishing* 3/2 (1997), online: <https://doi.org/10.3998/3336451.0003.201>.

—. "What is Humanities Computing and What is Not?" In: *Jahrbuch für Computerphilologie* 4 (2002), 71–84, online: <http://computerphilologie.digital-humanities.de/jg02/unsworth.html> (accessed 12 January 2023).

Ustinov, Andrei. "The Legacy of Russian Formalism and the Rise of the Digital Humanities." In: *Wiener Slavistisches Jahrbuch* 4 (2016), 287–289, online: <https://doi.org/10.13173/wienslavjahr.4.2016.0287>.

Vietta, Silvio. "Heideggers Hölle: Eine Replik auf Luca Di Blasis Heidegger-Kritik." In: *Allgemeine Zeitschrift für Philosophie* 40/1 (2015), 83–100.

Viola, Tullio. "Peirce and Iconology: Habitus, Embodiment, and the Analogy between Philosophy and Architecture." In: *European Journal of Pragmatism and American Philosophy* 4/1 (2012), online: <https://doi.org/10.4000/ejpap.764>.

Vivani, Christian. "Julien Duvivier entre Paris et Hollywood: Le cheminement des images." In: *Revue française d'études américaines* 115 (2008), 121–136.

Vogeler, Georg. "Digitale Editionspraxis: Vom pluralistischen Textbegriff zur pluralistischen Softwarelösung." In: *Textgenese in der digitalen Edition* (editio / Beihefte; vol. 45), ed. by Anke Bosse and Walter Fanta. Berlin / Boston: De Gruyter, 2019, 117–136, online: <https://doi.org/10.1515/9783110575996-008>.

—. "The 'Assertive Edition': On the Consequences of Digital Methods in Scholarly Editing for Historians." In: *International Journal of Digital Humanities* 1 (2019), 309–322, online: <https://doi.org/10.1007/s42803-019-00025-5>.

—. "'Standing-off Trees and Graphs': On the Affordance of Technologies for the Assertive Edition." In: *Graph Data-Models and Semantic Web Technologies in Scholarly Digital Editing* (Schriften des Instituts für Dokumentologie und Editorik; vol. 15), ed. by Elena Spadini, Francesca Tomasi and Georg Vogeler, Norderstedt: Books on Demand, 2021, 73–94.

Voth, Christine. "What Lies Beneath: The Application of Digital Technology to Uncover Writing Obscured by a Chemical Reagent." In: *Kodikologie und Paläographie im digitalen Zeitalter 3* (Schriften des Instituts für Dokumentologie und Editorik; vol. 10), ed. by Oliver Duntze, Torsten Schaßan and Georg Vogeler. Norderstedt: Books on Demand, 2015, 47–64.

van de Waal, Henri. "In Memoriam Erwin Panofsky, March 30 1892 – March 14 1968." In: *Mededelingen der Koninklijke Nederlandse Akademie van Wetenschappen, Afd. Letterkunde* 35/6 (1972), 227–237, online: <http://www.dwc.knaw.nl/DL/publications/PU00009846.pdf> (accessed 12 January 2023) [originally spoken at a gathering on 14 April 1968].

Wahl, Chris. "Film Versions and Critical Editions: Publishing for the Community of Film Scholars." In: *Critical Editions of Film: Film Tradition, Film Transcription in the Digital Era*, ed. by Giulio Bursi and Simone Venturini. Pasian di Prato: Campanotto Editore, 2008, 72–80.

—. "Den Unterschied macht die Forschung: ein Doppelplädoyer für das kritische Edieren von Ufa-Sprachversions- und NS-Vorbehaltsfilmen." In: *Kritische Film- und Literaturedition: Perspektiven einer transdisziplinären Editionswissenschaft* (editio / Beihefte; vol. 51), ed. by Ursula von Keitz, Wolfgang Lukas and Rüdiger Nutt-Kofoth. Berlin / Boston: De Gruyter, 2022, 293–306, online: <https://doi.org/10.1515/9783110684605-015>.

Warwick, Claire. "Building Theories or Theories of Building? A Tension at the Heart of Digital Humanities." In: *A New Companion to Digital Humanities*, ed. by Susan Schreibman, Ray Siemens and John

Unsworth. Chichester, West Sussex: Wiley Blackwell, 2016, 538–552, online: <https://doi.org/10.1002/9781118680605.ch37>.

Weatherby, Leif. "The Cybernetic Humanities." In: *Los Angeles Review of Books* (2 January 2017), online: <https://lareviewofbooks.org/article/the-cybernetic-humanities/> (accessed 8 February 2023).

Weber, Eugen. "Great Man at Work: Michelet Reconsidered." In: *The American Scholar* 60/1 (1991), 53–72.

Weber, Max. "Die ‚Objektivität' sozialwissenschaftlicher und sozialpolitischer Erkenntnis." In: *Archiv für Sozialwissenschaft und Sozialpolitik* 19/1 (1904), 22–87.

Weckwerth, Alfred. "Die Zweckbestimmung der Armenbibel und die Bedeutung ihres Namens." In: *Zeitschrift für Kirchengeschichte* 68 (1957), 225–258.

Wedel, Michael. "Universal, Germany, and All Quiet on the Western Front: A Case Study in Crisis Historiography." In: *NECSUS: European Journal of Media Studies* 1/1 (2012), 126–147, online: <https://doi.org/10.25969/mediarep/15044>.

Weisner, Ulrich. "Original und Reproduktion." In: *Westfalen: Hefte für Geschichte, Kunst und Volkskunde* 55/1–2 (1977), 205–219.

Weitenkampf, Frank. "What is a Facsimile?" In: *The Papers of the Bibliographical Society of America* 37/2 (1943), 114–130.

Wenzel, Horst. "Autorenbilder: Zur Ausdifferenzierung von Autorenfunktionen in mittelalterlichen Miniaturen." In: *Autor und Autorschaft im Mittelalter*, ed. by Elizabeth Andersen [et al.]. Tübingen: Niemeyer, 1998, 1–28.

Wiesenmüller, Heidrun. "Sacherschließung unter FRBR und RDA in Theorie und Praxis." In: *O-Bib: Das offene Bibliotheksjournal* 3/3 (2016), 24–53, online: <https://doi.org/10.5282/o-bib/2016H3S24-53>.

Wilke, Tobias. "Einfühlung als Metapher." In: *Deutsche Vierteljahrsschrift für Literaturwissenschaft und Geistesgeschichte* 88/3 (2014), 321–344.

Williams, Tony. "Macbeth." In: *Senses of Cinema* 38 (2006), online: <http://sensesofcinema.com/2006/cteq/macbeth-2/> (accessed 28 August 2023).

Williams-Krapp, Werner. "Bild und Text: Zu den illustrierten Handschriften der ‚*Legenda aurea*' des französischen und des deutschsprachigen Raums." In: *Archiv für Kulturgeschichte* 97/1 (2015), 89–107.

Wiltsche, Harald A. "Models, Science, and Intersubjectivity." In: *Husserl's Phenomenology of Intersubjectivity: Historical Interpretations and Contemporary Applications*, ed. by Frode Kjosavik, Christian Beyer and Christel Fricke. London / New York: Routledge, 2019, 339–358.

Wimmer, Mario. "The Afterlives of Scholarship: Warburg and Cassirer." In: *History of Humanities* 2/1 (2017), 245–270.

—. "Wie es eigentlich gewesen." In: *Enzyklopädie der Genauigkeit*, ed. by Markus Krajewski, Antonia von Schöning and Mario Wimmer. Konstanz: Konstanz University Press, 2021, 514–531.

Winograd, Terry. "Foreword." In: *Heidegger, Coping, and Cognitive Science* (Essays in Honor of Hubert L. Dreyfus; vol. 2), ed. by Mark Wrathall and Jeff Malpas. Cambridge, Massachusetts: MIT Press, 2000, vii–ix.

Wisser, Richard. "Jaspers und Heidegger: Eine Aufgabenstellung in Form eines Problemaufrisses." In: *Karl Jaspers, Philosopher among Philosophers / Philosoph unter Philosophen*, ed. by Richard Wisser and Leonard H. Ehrlich. Würzburg: Königshausen & Neumann / Amsterdam: Rodopi, 1993, 153–162.

Wittekind, Susanne. "Visualizing Salvation: The Role of Arboreal Imagery in the Speculum Humanae Salvationis (Kremsmünster, Library of the Convent, Cod. 243)." In: *The Tree: Symbol, Allegory, and Mnemonic Device in Medieval Art and Thought*, ed. by Pippa Salonius and Andrea Worm. Turnhout: Brepols, 2014, 117–142.

Wittgenstein, Ludwig. "Logisch-Philosophische Abhandlung." In: *Annalen der Naturphilosophie* (vol. 14), ed. by Wilhelm Ostwald. Leipzig: Unesma, 1921, 185–262.

Woldeyes, Yirga Gelaw. "Colonial Rewriting of African History: Misinterpretations and Distortions in Belcher and Kleiner's Life and Struggles of Walatta Petros." In: *Journal of Afroasiatic Languages, History and Culture* 9/2 (2020), 133–220.

Wolf, Jürgen. "Sammelhandschriften – mehr als die Summe der Einzelteile." In: *Überlieferungsgeschichte transdisziplinär: Neue Perspektiven auf ein germanistisches Forschungsparadigma* (Wissensliteratur im Mittelalter; vol. 52), ed. by Dorothea Klein, Horst Brunner and Freimut Löser. Wiesbaden: Reichert, 2016, 69–82.

Wolin, Richard. "Nazism and the Complicities of Hans-Georg Gadamer: Untruth and Method." In: *The New Republic* (15 May 2000), 36–45.

—. "Heideggers 'Schwarze Hefte': Nationalsozialismus, Weltjudentum und Seinsgeschichte." Transl. by Jürgen Zarusky. In: *Vierteljahrshefte für Zeitgeschichte* 63/3 (2015), 379–410, online: <https://doi.org/10.1515/vfzg-2015-0022>.

Worm, Andrea. "Mittelalterliche Buchmalerei im Spiegel neuzeitlicher Publikationen." In: *Visualisierung und Imagination: Materielle Relikte des Mittelalters in bildlichen Darstellungen der Neuzeit und der Moderne* (Göttinger Gespräche zur Geschichtswissenschaft; vol. 25), ed. by Bernd Carqué, Daniela Mordini and Matthias Noell. Göttingen: Wallstein, 2006, 153–214.

—. "Per omnia saecula saeculorum: Alexander Minoritas Apokalypse-Kommentar und ein Retabel aus der Werkstatt Meister Bertrams in London." In: *Geschichte vom Ende her denken: Endzeitentwürfe und ihre Historisierung im Mittelalter*, ed. by Susanne Ehrich and Andrea Worm (Forum Mittelalter – Studien; vol. 15). Regensburg: Schnell & Steiner, 2019, 159–188.

Wu, Mingfang [et al.]. "Automated Metadata Annotation: What is and is not Possible with Machine Learning." In: *Data Intelligence* 5/1 (2023), 122–138, online: <https://doi.org/10.1162/dint_a_00162>.

Wüstneck, Klaus Dieter. "Zur philosophischen Verallgemeinerung und Bestimmung des Modellbegriffs." In: *Deutsche Zeitschrift für Philosophie* 11/12 (1963), 1504–1532.

—. "Einige Gesetzmäßigkeiten und Kategorien der wissenschaftlichen Modellmethode." In: *Deutsche Zeitschrift für Philosophie* 14/2 (1966), 1452–1463.

Wuttke, Dieter. "Erwin Panofsky (1892–1968)." In: *The Routledge Companion to Medieval Iconography*, ed. by Colum Hourihane. London / New York: Routledge, 2017, 105–122.

Yehuda, Rachel, Amy Lehrner and Linda M. Bierer. "The Public Reception of Putative Epigenetic Mechanisms in the Transgenerational Effects of Trauma." In: *Environmental Epigenetics* 4/2 (2018), online: <https://doi.org/10.1093/eep/dvy018>.

Yolles, Maurice, and Gerhard Fink. "A General Theory of Generic Modelling and Paradigm Shifts: Part 1 – The Fundamentals." In: *Kybernetes* 44/2 (2015), 283–298 [part 2 'Cybernetic Orders' in the same issue, 299–310, and part 3 'The Extension' in the same issue, 311–328].

Zacharek, Stephanie. "1933: Baby Face is Censored." In: *A New Literary History of America*, ed. by Greil Marcus and Werner Sollors. Cambridge, Massachusetts / London: Harvard University Press, 2012, 668–672.

Zeller, Hans. "Zur gegenwärtigen Aufgabe der Editionstechnik: Ein Versuch, komplizierte Handschriften darzustellen (1958)." In: *Dokumente zur Geschichte der neugermanistischen Edition* (Bausteine zur Geschichte der Edition; vol. 1), ed. by Rüdiger Nutt-Kofoth. Berlin: De Gruyter, 2005, 194–214, online: <https://doi.org/10.1515/9783110926927.194> [originally published in: *Euphorion* 52 (1958), 356–377].

—. "Befund und Deutung: Interpretation und Dokumentation als Ziel und Methode der Edition." In: *Texte und Varianten: Probleme ihrer Edition und Interpretation*, ed. by Gunter Martens and Hans Zeller. München: C.H. Beck, 1971, 45–89.

—. "Die Faksimile-Ausgabe als Grundlagenedition für Philologie und Textgenetik: Ein Vorschlag." In: *Textgenetische Edition* (editio / Beihefte; vol. 10), ed. by Hans Zeller and Gunter Martens. Tübingen: Niemeyer, 1998, 80–100, online: <https://doi.org/10.1515/9783110939996-005>.

Zöllner-Weber, Amélie. "Text Encoding and Ontology: Enlarging an Ontology by Semi-Automatic Generated Instances." In: *Literary and Linguistic Computing* 26/3 (2011), 365–370, online: <https://doi.org/10.1093/llc/fqr021>.

van Zundert, Joris. "Screwmeneutics and Hermenumericals: The Computationality of Hermeneutics." In: *A New Companion to Digital Hu-*

manities, ed. by Susan Schreibman, Ray Siemens and John Unsworth. Hoboken, New Jersey: John Wiley & Sons, 2016, 331–347.

—. "On Not Writing a Review about Mirador: Mirador, IIIF, and the Epistemological Gains of Distributed Digital Scholarly Resources." In: *Digital Medievalist* 11/1 (2018), [1–5], online: <https://doi.org/10.16995/dm.78>.

van Zundert, Joris [et al.]. "Cultures of Formalisation: Towards an Encounter between Humanities and Computing." In: *Understanding Digital Humanities*, ed. by David M. Berry. Basingstoke [et al.]: Palgrave Macmillan, 2012, 279–294.

Research Literature

MONOGRAPHS, VOLUMES

[MGH]. *Fälschungen im Mittelalter: Internationaler Kongreß der Monumenta Germaniae Historica München, 16.-19. September 1986* (Schriften der Monumenta Germaniae Historica; vol. 33,1–5). Hannover: Hahn, 1988.

Abbate, Janet. *Inventing the Internet*. Cambridge, Massachusetts / London: MIT Press, 1999.

Adorno, Theodor W. [et al.]. *Der Positivismusstreit in der deutschen Soziologie* (Soziologische Texte; vol. 58). Neuwied [et al.]: Luchterhand, 1969.

Alexander, Isabella, and H. Tomás Gómez-Arostegui (Eds.). *Research Handbook on the History of Copyright Law*. Cheltenham [et al.]: Edward Elgar, 2016.

Alpers, Svetlana. *The Art of Describing: Dutch Art in the Seventeenth Century*. Chicago: University of Chicago Press, 1983.

Andrews, Edna. *Conversations with Lotman: Cultural Semiotics in Language, Literature, and Cognition*. Toronto: University of Toronto Press, 2003.

Andrist, Patrick, Paul Canart and Marilena Maniaci. *La syntaxe du codex: Essai de codicologie structurale*. Turnhout: Brepols, 2013.

Angermuller, Johannes. *Why There Is No Poststructuralism in France: The Making of an Intellectual Generation*. London: Bloomsbury Academic, 2015.

Antoniou, Grigoris, Paul Groth, Frank van Harmelen and Rinke Hoekstra. *A Semantic Web Primer*. Cambridge, Massachusetts / London: MIT Press, ³2012 [originally published 2004].

Apollon, Daniel, Claire Bélisle and Philippe Régnier (Eds.). *Digital Critical Editions*. Urbana [et al.]: University of Illinois Press, 2014.

Ashman, Keith, and Phillip Barringer (Eds.). *After the Science Wars: Science and the Study of Science*. London / New York: Routledge, 2001.

Assmann, Aleida. *Erinnerungsräume: Formen und Wandlungen des kulturellen Gedächtnisses*. München: C.H. Beck, 1999.

Atkinson, Benedict, and Brian Fitzgerald. *A Short History of Copyright: The Genie of Information*. Heidelberg [et al.]: Springer, 2014.

Augustyn, Wolfgang, and Ulrich Söding (Eds.). *Original – Kopie – Zitat: Kunstwerke des Mittelalters und der Frühen Neuzeit; Wege der Aneignung, Formen der Überlieferung* (Veröffentlichungen des Zentralinstituts für Kunstgeschichte in München; vol. 26). Passau: Klinger, 2010.

Baca, Murtha (Ed.). *Introduction to Metadata*. Los Angeles: Getty Publications, ³2016, online: <http://www.getty.edu/publications/intrometadata/> (accessed 20 February 2023) [originally published in 1998].

Barrios, Richard. *Screened Out: Playing Gay in Hollywood from Edison to Stonewall*. London / New York: Routledge, 2005.

Bauer, Henry H. *Scientific Literacy and the Myth of the Scientific Method*. Champaign, Illinois: University of Illinois Press, 1992.

Bauer, Thomas. *Die Vereindeutigung der Welt: Über den Verlust an Mehrdeutigkeit und Vielfalt*. Ditzingen: Reclam, 2018.

Bein, Thomas, Rüdiger Nutt-Kofoth and Bodo Plachta (Eds.). *Autor – Autorisation – Authenzität* (editio / Beihefte; vol. 21). Tübingen: Max Niemeyer, 2012.

Beinsteiner, Andreas. *Heideggers Philosophie der Medialität*. Frankfurt am Main: Vittorio Klostermann, 2021.

Benjamin, Walter. *Das Kunstwerk im Zeitalter seiner technischen Reproduzierbarkeit* (Werke und Nachlaß / Walter Benjamin; vol. 16), ed. by Burkhardt Lindner. Berlin: Suhrkamp, 2013 [collection of five versions; the essay was written in 1935 and originally published in a redacted French version as "L'œuvre d'art à l'époque de sa reproduction mécanisée," transl. by Pierre Klossowski, in: *Zeitschrift für Sozialforschung* 5/1 (1936), 40–68].

Bernheim, Ernst. *Einleitung in die Geschichtswissenschaft*. Leipzig: G. J. Göschen, 1905.

Berry, David M. *Critical Theory and the Digital*. New York [et al.]: Bloomsbury Academic, 2014.

Berve, Maurus. *Die Armenbibel: Herkunft, Gestalt, Typologie. Dargestellt anhand von Miniaturen aus der Handschrift Cpg 148 der Universitätsbibliothek Heidelberg* (Kult und Kunst; vol. 4). Beuron: Beuroner Kunstverlag, 1969.

Besserman, Lawrence (Ed.). *The Challenge of Periodization: Old Paradigms and New Perspectives*. London / New York: Routledge, 2013 [originally published in New York: Garland, 1996].

Betzwieser, Thomas, and Markus Schneider (Eds.). *Aufführung und Edition* (editio / Beihefte; vol. 46). Berlin / Boston: De Gruyter, 2019.

Bianchi, Alvaro. *Gramsci's Laboratory: Philosophy, History and Politics*. Leiden [et al.]: Brill, 2019.

Bischoff, Bernhard. *Paläographie des römischen Altertums und des abendländischen Mittelalters* (Grundlagen der Germanistik; vol. 24). Berlin: Schmidt, 1979.

Black, Max. *Models and Metaphors: Studies in Language and Philosophy*. Ithaca: Cornell University Press, 1962.

Blanke, David. *Cecil B. DeMille, Classical Hollywood, and Modern American Mass Culture: 1910–1960*. Cham: Springer, 2018.

Bleier, Roman [et al.] (Eds.). *Digital Scholarly Editions as Interfaces* (Schriften des Instituts für Dokumentologie und Editorik; vol. 12). Norderstedt: Books on Demand, 2018.

Blümle, Claudia, Horst Bredekamp and Matthias Bruhn (Eds.). *Bildwelten des Wissens: Kunsthistorisches Jahrbuch für Bildkritik* (vol. 1,1). Berlin: Akademie-Verlag, 2003.

Blumenfeld-Kosinski, Renate. *Poets, Saints, and Visionaries of the Great Schism: 1378–1417*. University Park, Pennsylvania: Penn State Press, 2010.

Bock, Hans-Michael, and Simone Venturini (Eds.). "Multiple and Multiple-Language Versions II." Thematic issue. *Cinéma & Cie: International Film Studies Journal* 6 (2005).

Bod, Rens. *A New History of the Humanities: The Search for Principles and Patterns from Antiquity to the Present*. Oxford [et al.]: Oxford University Press, 2013.

—. *World of Patterns: A Global History of Knowledge*, transl. by Leston Buell. Baltimore: Johns Hopkins University Press, 2022 [originally published as *Een wereld vol patronen: De geschiedenis van kennis*, Amsterdam: Prometheus, 2019].

Bohn, Anna. *Denkmal Film* (2 vols.). Weimar [et al.]: Böhlau, 2013.

—. *Film-Metadaten: Standards der Erschließung von Filmen mit RDA und FRBR im internationalen Vergleich und Perspektiven des Datenaustauschs* (Berliner Handreichungen zur Bibliotheks- und Informationswissenschaft; vol. 431). Berlin: Institut für Bibliotheks- und Informationswissenschaft der Humboldt-Universität zu Berlin, 2018.

Bontempelli, Pier Carlo. *Knowledge, Power, and Discipline: German Studies and National Identity* (Contradictions; vol. 19), transl. by Gabriele Pool. Minneapolis: University of Minnesota Press, 2004.

Boot, Peter. *Mesotext: Digitised Emblems, Modelled Annotations and Humanities Scholarship.* Amsterdam: Amsterdam University Press, 2009.

Bordalejo, Barbara, and Roopika Risam (Eds.). *Intersectionality in Digital Humanities* (Collection Development, Cultural Heritage, and Digital Humanities Series; vol. 4). York: Arc Humanities Press, 2019.

Bornstein, George. *Material Modernism: The Politics of the Page*. Cambridge: Cambridge University Press, 2001.

Bornstein, George, and Theresa Lynn Tinkle (Eds.). *The Iconic Page in Manuscript, Print, and Digital Culture*. Ann Arbor: University of Michigan Press, 1998.

Box, George E. P., Alberto Luceño and María Del Carmen Paniagua-Quiñones. *Statistical Control by Monitoring and Adjustment*. Hoboken, New Jersey: Wiley, ²2009, 61 [originally published 1997].

von Brandt, Ahasver. *Werkzeug des Historikers: Eine Einführung in die historischen Hilfswissenschaften*. Stuttgart: Kohlhammer, 1958.

Braudel, Fernand. *Le Modèle italien*, Paris: Arthaud, 1989.

Breitenbach, Edgar. *Speculum humanae salvationis: Eine typengeschichtliche Untersuchung* (Studien zur deutschen Kunstgeschichte; vol. 272). Strasbourg: Heitz, 1930.

Brown, Cynthia J. *Poets, Patrons, and Printers: Crisis of Authority in Late Medieval France*. Ithaca [et al.]: Cornell University Press, 1995.

Bruno, Paul W. *Kant's Concept of Genius: Its Origin and Function in the Third Critique*. London [et al.]: Continuum, 2011.

Bruun, Christer, and Jonathan Edmondson (Eds.). *The Oxford Handbook of Roman Epigraphy*. Oxford [et al.]: Oxford University Press, 2015.

Buchanan, Judith R. *Shakespeare on Film*. London / New York: Routledge, 2014 [originally published 2005].

Büttner, Frank, and Andrea Gottdang. *Einführung in die Ikonographie: Wege zur Deutung von Bildinhalten*. München: C.H. Beck, 2006.

Burdman Feferman, Anita, and Solomon Feferman. *Alfred Tarski: Life and Logic*. Cambridge: Cambridge University Press, 2004.

Burnard, Lou, Katherine O'Brien O'Keeffe and John Unsworth (Eds.). *Electronic Textual Editing*. New York: Modern Language Association of America, 2006.

Burr, David. *The Spiritual Franciscans: From Protest to Persecution in the Century After Saint Francis*. Pennsylvania State University Press, 2001.

Burt, Richard. *Medieval and Early Modern Film and Media*. Basingstoke [et al.]: Palgrave Macmillan, 2008.

Calle-Gruber, Mireille, and Peter Engelmann (Eds.). *Jacques Derrida, Hans-Georg Gadamer, Philippe Lacoue-Labarthe. Heidegger: Philosophische und politische Tragweite seines Denkens. Das Kolloquium von Heidelberg. Mit einer Notiz von Jean-Luc Nancy*, transl. by Esther von der Osten. Wien: Passagen, 2016 [originally published in French as *La conférence de Heidelberg – Heidegger: portée philosophique et politique de sa pensée avec Jacques Derrida, Hans-Georg Gadamer, Philippe Lacoue-Labarthe*, ed. by Mireille Calle-Gruber, Fécamp: Nouvelles Éditions Lignes, 2014].

Campany, David. *Photography and Cinema*. London: Reaktion Books, 2008.

Carrier, Martin [et al.] (Eds.). *Knowledge and the World: Challenges Beyond the Science Wars*. Berlin: Springer, 2004.

Caviness, Madeline H. *The Windows of Christ Church Cathedral Canterbury* (Great Britain; vol. 2). London: Oxford University Press, 1981.

Cerquiglini, Bernard. *Éloge de la variante: Histoire critique de la philology*. Paris: Ed. du Seuil, 1989.

Ceynowa, Klaus. *Zwischen Pragmatismus und Fiktionalismus: Hans Vaihingers ‚Philosophie des Als Ob'* (Epistemata: Reihe Philosophie; vol. 129). Würzburg: Königshausen & Neumann, 1993.

Chandler, Daniel. *Semiotics: The Basics*. London / New York: Routledge, 2002.

Ciula, Arianna [et al.] (Eds.). *Models and Modelling between Digital and Humanities: A Multidisciplinary Perspective* (HSR; suppl. 31). Köln: GESIS, 2018, online: <https://nbn-resolving.org/urn:nbn:de:0168-ssoar-62883-7>.

Cook, Patrick J. *Cinematic Hamlet: The Films of Olivier, Zeffirelli, Branagh, and Almereyda*. Ohio: Ohio University Press, 2011.

Cotticelli-Kurras, Paola, and Federico Giusfredi (Eds.). *Formal Representation and the Digital Humanities*. Newcastle upon Tyne: Cambridge Scholars Publishing, 2018.

Crossvogel, David I. *Didn't You Used to be Depardieu? Film as Cultural Marker in France and Hollywood* (Framing Film / The History of Art and Cinema; vol. 5). New York [et al.]: Peter Lang, 2002.

Cruz, Maria Teresa (Ed.). *Media Theory and Cultural Technologies: In Memoriam Friedrich Kittler*. Newcastle upon Tyne: Cambridge Scholars Publishing, 2017.

Cuff, Paul. *A Revolution for the Screen: Abel Gance's Napoléon*. Amsterdam: Amsterdam University Press, 2015.

Curschmann, Michael. *Wort, Bild, Text: Studien zur Medialität des Literarischen in Hochmittelalter und früher Neuzeit* (Saecvla spiritalia; vols. 43 and 44). Baden-Baden: Valentin Koerner, 2007.

Damböck, Christian, and Hans-Ulrich Lessing (Eds.). *Dilthey als Wissenschaftsphilosoph*. Freiburg / München: Karl Alber, 2016.

Danowski, Patrick, and Adrian Pohl (Eds.). *(Open) Linked Data in Bibliotheken*. Berlin / Boston: De Gruyter, 2013.

Davies, Anthony. *Filming Shakespeare's Plays: The Adaptations of Laurence Olivier, Orson Welles, Peter Brook, Akira Kurosawa*. Cambridge: Cambridge University Press, 1988.

Deazley, Ronan [et. al] (Eds.). *Privilege and Property: Essays on the History of Copyright*. Cambridge: Open Book Publishers, 2010.

Deegan, Marilyn, and Kathryn Sutherland (Eds.). *Text Editing, Print and the Digital World*. Farnham: Ashgate, 2009.

Demandt, Alexander. *Ungeschehene Geschichte: Ein Traktat über die Frage: Was wäre geschehen, wenn ...?* Göttingen: Vandenhoeck & Ruprecht, 1986.

Déroche, François. *Islamic Codicology: An Introduction to the Study of Manuscripts in Arabic Script*. London: Al-Furqān Islamic Heritage Foundation, 2006.

Derrida, Jacques. *Ulysse gramophone: deux mots pour Joyce*. Paris: Ed. Galilée, 1987.

—. *Of Spirit: Heidegger and the Question*, transl. by Geoffrey Bennington and Rachel Bowlby. Chicago: Chicago University Press, 1989 [originally published in French as *De l'esprit*, Paris: Éditions Galilée, 1987].

—. *Mal d'archive: une impression freudienne*. Paris: Éditions Galilée, 1995.

De Santis, Annamaria, and Irene Rossi (Eds.). *Crossing Experiences in Digital Epigraphy: From Practice to Discipline*. Berlin / Boston: De Gruyter, 2018.

Devlin, Keith. *Logic and Information*. Cambridge: Cambridge University Press, 1995 [first paperback edition; originally published 1991].

Di Cesare, Donatella. *Heidegger and the Jews: The Black Notebooks*, transl. by Murtha Baca. Cambridge / Medford: Polity, 2018 [originally published as *Heidegger e gli ebrei: I 'Quaderni neri'*, Turin: Bollati Boringhieri, 2014].

Dietl, Cora, Christoph Schanze and Friedrich Wolfzettel (Eds.). *Artusroman und Bildlichkeit* (Schriften der Internationalen Artusgesellschaft; vol. 17). Berlin / Boston: De Gruyter, 2023.

van Dijk, Teun A. *Macrostructures: An Interdisciplinary Study of Global Structures in Discourse, Interaction, and Cognition*. Hillsdale: Lawrence Erlbaum, 1980 [reprinted by London / New York: Routledge, 2019].

Dirscherl, Klaus (Ed.). *Bild und Text im Dialog* (Passauer interdisziplinäre Kolloquien; vol. 3). Passau: Rothe, 1993.

Dobson, James E. *Critical Digital Humanities: The Search for a Methodology*. Urbana, Illinois: University of Illinois Press, 2019.

Doherty, Thomas. *Hollywood's Censor: Joseph I. Breen and the Production Code Administration*. New York: Columbia University Press, 2009.

Donnelly, K. J., and Ann-Kristin Wallengren (Eds.). *Today's Sounds for Yesterday's Films: Making Music for Silent Cinema*. Basingstoke: Palgrave Macmillan, 2016.

Dretske, Fred I. *Knowledge and the Flow of Information*. Cambridge, Massachusetts: MIT Press, 1981.

Driscoll, Matthew James, and Elena Pierazzo (Eds.). *Digital Scholarly Editing: Theories and Practices* (Digital Humanities Series; vol. 4). Cambridge: Open Book Publishers, 2016.

Drogin, Marc. *Anathema! Medieval Scribes and the History of Book Curses*. Montclair: Allanheld & Schram, 1983.

Drucker, Johanna. *Visualization and Interpretation: Humanistic Approaches to Display*. Cambridge, Massachusetts: MIT Press, 2020.

Ďurovičová, Nataša (Ed.). "Multiple and Multiple-Language Versions." Thematic issue. *Cinéma & Cie: International Film Studies Journal* 4 (2004).

Earhart, Amy E. *Traces of the Old, Uses of the New: The Emergence of Digital Literary Studies*. Ann Arbor: University of Michigan Press, 2015.

Edmond, Jennifer [et al.] (Eds.). *The Trouble With Big Data: How Datafication Displaces Cultural Practices*. London [et al.]: Bloomsbury Academic, 2022, online: <https://doi.org/10.5040/9781350239654>.

Eggert, Paul. *Securing the Past: Conservation in Art, Architecture and Literature*. Cambridge: Cambridge University Press, 2009.

Embach, Michael. *Die Schriften Hildegards von Bingen: Studien zu ihrer Überlieferung im Mittelalter und in der Frühen Neuzeit*. Berlin: Akademie-Verlag, 2003.

Engel, Kathrin. *Deutsche Kulturpolitik im besetzten Paris 1940–1944: Film und Theater*. München: Oldenbourg, 2003.

Embley, David W., and Bernhard Thalheim (Eds.). *Handbook of Conceptual Modeling: Theory, Practice, and Research Challenges*. Heidelberg [et al.]: Springer, 2011.

Empson, William. *Seven Types of Ambiguity: A Study of Its Effects in English Verse*. London: Chatto and Windus, 1930.

Erickson, Paul [et al.]. *How Reason Almost Lost Its Mind: The Strange Career of Cold War Rationality*. Chicago / London: University of Chicago Press, 2013.

Erll, Astrid, and Ansgar Nünning (Eds.). *Cultural Memory Studies: An International and Interdisciplinary Handbook* (Media and Cultural Memory; vol. 8). Berlin: De Gruyter, 2008.

Evans, Richard J. *Altered Pasts: Counterfactuals in History*. Waltham: Brandeis University Press, 2014.

Farías, Victor. *Heidegger et le nazisme*. Lagrasse: Verdier, 1987.

Fasbender, Christoph (Ed.). *Aus der Werkstatt Diebold Laubers* (Kulturtopographie des alemannischen Raums; vol. 3). Berlin / Boston: De Gruyter, 2012.

Faye, Jan. *After Postmodernism: A Naturalist Reconstruction of the Humanities*. Basingstoke [et al.]: Palgrave Macmillan, 2012.

Fickers, Andreas, and Juliane Tatarinov (Eds.). *Digital History and Hermeneutics: Between Theory and Practice* (Studies in Digital History and Hermeneutics; vol. 2). Berlin / Boston: De Gruyter, 2022, online: <https://doi.org/10.1515/9783110723991>.

Flanders, Julia, and Fotis Jannidis (Eds.). *The Shape of Data in Digital Humanities: Modeling Texts and Text-based Resources*. London / New York: Routledge, 2018.

Fleming, Martha H. (Ed.). *The Late Medieval Pope Prophecies: The Genus nequam Group* (Medieval and Renaissance Texts and Studies; vol. 204). Tempe: Arizona Center for Medieval and Renaissance Studies, 1999.

Ford, Elizabeth A., and Deborah C. Mitchell. *The Makeover in Movies: Before and After in Hollywood Films, 1941–2002*. Jefferson, North Carolina: McFarland, 2004.

Foucault, Michel. *"Society Must Be Defended": Lectures at the Collège de France, 1975-1976*, transl. by David Macey, ed. by Mauro Bertani and Alessandro Fontana. New York: Picador, 2003.

Fraistat, Neil, and Julia Flanders (Eds.). *The Cambridge Companion to Textual Scholarship*. Cambridge: Cambridge University Press, 2013.

Frank, Manfred. *Was ist Neostrukturalismus?* (Edition Suhrkamp; vol. 1203). Frankfurt am Main: Suhrkamp, 1984.

Frank, Mitchell B., and Daniel Adler (Eds.). *German Art History and Scientific Thought: Beyond Formalism*. London / New York: Routledge, 2016 [first published by Farnham: Ashgate, 2012].

Frick, Caroline. *Saving Cinema: The Politics of Preservation*. Oxford [et al.]: Oxford University Press, 2011.

Frith, Christopher D., and Daniel M. Wolpert (Eds.). *The Neuroscience of Social Interaction: Decoding, Imitating, and Influencing the Actions of Others*. Oxford [et al.]: Oxford University Press, 2004.

Frühmorgen-Voss, Hella, and Norbert H. Ott (Eds.). *Text und Illustration im Mittelalter: Aufsätze zu den Wechselbeziehungen zwischen Literatur und bildender Kunst* (Münchener Texte und Untersuchungen zur Deutschen Literatur des Mittelalters; vol. 50). München: C.H. Beck, 1975.

Führkötter, Adelgundis (Ed.). *Hildegardis Scivias* (Corpus Christianorum. Continuatio mediaevalis; vol. 43). Turnhout: Brepols, 2003 [originally published in 2 vols. in 1978].

Fujiwara, Chris. *The World and Its Double: The Life and Work of Otto Preminger*. New York: Faber & Faber, 2008.

Funken, Christiane. *Modellierung der Welt: Wissenssoziologische Studien zur Software-Entwicklung*. Wiesbaden: Springer Fachmedien, 2001.

Gabriele, Matthew, and David M. Perry. *The Bright Ages: A New History of Medieval Europe*. New York: HarperCollins, 2021.

Gacek, Adam. *Arabic Manuscripts: A Vademecum for Readers*. Leiden [et al.]: Brill, 2009.

Gadamer, Hans-Georg. *Truth and Method*, transl. rev. by Joel Weinsheimer and Donald G. Marshall. London [et al.]: Bloomsbury Academic, 2013.

Gamm, Eva-Irina. *Die Problematik der Gestaltungshöhe im deutschen Urheberrecht: Unter besonderer Berücksichtigung europarechtlicher Vorgaben und der Überschneidung mit dem deutschen Geschmacksmuster-, Wettbewerbs- und Kennzeichnungsrecht* (Schriftenreihe des Archivs für Urheber- und Medienrecht; vol. 216). Baden-Baden: Nomos, 2004.

Garncarz, Joseph. *Filmfassungen: Eine Theorie signifikanter Filmvariation* (Studien zum Theater, Film und Fernsehen; vol. 16). Frankfurt am Main [et al.]: Peter Lang, 1992.

Genette, Gérard. *The Work of Art: Immanence and Transcendence*, transl. by G. M. Goshgarian. Ithaca / London: Cornell University Press, 1997, 71 [originally published as *L'œuvre de l'art: Immanence et transcendence*, Paris: Éditions du Seuil, 1994].

Gentzler, Edwin. *Translation and Rewriting in the Age of Post-Translation Studies*. London / New York: Routledge, 2016.

Geoghegan, Bernard Dionysius. *Code: From Information Theory to French Theory*. Durham: Duke University Press, 2023.

Gerovitch, Slava. *From Newspeak to Cyberspeak: A History of Soviet Cybernetics*. Cambridge, Massachusetts / London: MIT Press, 2002.

Gillen, Otto. *Ikonographische Studien zum Hortus deliciarum der Herrad von Landsberg* (Kunstwissenschaftliche Studien; vol. 9). Berlin: Deutscher Kunstverlag, 1931.

Ginzburg, Carlo. *Il formaggio e i vermi: Il cosmo di un mugnaio del '500*, Turin: Einaudi, 1976.

—. *Spurensicherung: Die Wissenschaft auf der Suche nach sich selbst* (Kleine kulturwissenschaftliche Bibliothek; vol. 50), transl. by Gisela Bonz and Karl F. Hauber. Berlin: Wagenbach, 1995.

Goodman, Nelson. *Languages of Art: An Approach to a Theory of Symbols*. Indianapolis: Hackett, ²1976 [originally published in 1968].

Grabes, Herbert. *Speculum, Mirror und Looking-Glass: Kontinuität und Originalität der Spiegelmetapher in den Buchtiteln des Mittelalters und der englischen Literatur des 13.–17. Jahrhunderts* (Anglia Book Series; vol. 16). Tübingen: Max Niemeyer, 2018 [reprint; originally published in 1973].

Green, Jonathan. *Printing and Prophecy: Prognostication and Media Change 1450–1550*. Ann Arbor: University of Michigan Press, 2012.

Green, Rosalie [et al.] (Eds.). *Hortus Deliciarum* (2 vols.). Leiden [et al.]: Brill, 1979.

Griese, Sabine, and Claudine Moulin (Eds.). *Verweiskulturen des Mittelalters*. Wolfenbüttel: Herzog August Bibliothek, 2022.

Gross, Paul R., and Norman Levitt. *Higher Superstition: The Academic Left and Its Quarrels with Science*. Baltimore: John Hopkins University Press, 1994.

Grundmann, Herbert. *Studien über Joachim von Floris* (Beiträge zur Kulturgeschichte des Mittelalters und der Renaissance; vol. 32). Leipzig [et al.]: Teubner, 1927.

Guerrini, Paola. *Propaganda politica e profezie figurate nel tardo Medioevo* (Nuovo Medioevo; vol. 51). Napoli: Liguori, 1997.

Gurr, Andrew. *The Shakespeare Company, 1594–1642*. Cambridge: Cambridge University Press, 2004.

Gutmann, Mathias. *Die Evolutionstheorie und ihr Gegenstand: Beitrag der methodischen Philosophie zu einer konstruktiven Theorie der Evolution* (Studien zur Theorie der Biologie; vol. 1). Berlin: VBW, 1996.

Hageman, Mariëlle, and Marco Mostert (Eds.). *Reading Images and Texts: Medieval Images and Texts as Forms of Communication. Papers from the Third Utrecht Symposium on Medieval Literacy, Utrecht, 7–9 December 2000*. Turnhout: Brepols, 2005.

Hahn, Cynthia. *Portrayed on the Heart: Narrative Effect in Pictorial Lives of Saints from the Tenth through the Thirteenth Century*. Berkeley [et al.]: University of California Press, 2001.

Hallinger, Stephanie. *Text und Bild in der elsässischen Legenda aurea: Der Cgm 6 (Bayerische Staatsbibliothek München) und der Cpg 144 (Universitätsbibliothek Heidelberg)* (Schriftenreihe Schriften zur Mediävistik; vol. 22). Hamburg: Kovač, 2015.

de Hamel, Christopher. *The British Library Guide to Manuscript Illumination: History and Techniques*. Toronto / Buffalo: University of Toronto Press, 2001.

Hamm, Joachim, and Dorothea Klein (Eds.). *Text – Bild – Ton: Spielarten der Intermedialität in Mittelalter und früher Neuzeit*. Würzburg: Königshausen & Neumann, 2021.

Hannoosh, Michèle. *Jules Michelet: Writing Art and History in Nineteenth-Century France*. University Park: Pennsylvania State University Press, 2019.

Harms, Wolfgang (Ed.). *Text und Bild, Bild und Text: DFG-Symposion 1988*. Stuttgart: J.B. Metzler, 1990.

Hausmann, Frank-Rutger. *‚Deutsche Geisteswissenschaft' im Zweiten Weltkrieg: Die ‚Aktion Ritterbusch' (1940–1945)*. Heidelberg: Synchron, [3]2007 [originally published in 1998].

—. *Die Geisteswissenschaften im ‚Dritten Reich'*. Frankfurt am Main: Vittorio Klostermann, 2011.

Hawking, Stephen, and Leonard Mlodinow. *The Grand Design*. New York: Bantam Books, 2010.

Heftberger, Adelheid. *Kollision der Kader: Dziga Vertovs Filme, die Visualisierung ihrer Strukturen und die Digital Humanities* (Film-Erbe; vol. 2). München: edition text+kritik, 2016.

—. *Digital Humanities and Film Studies: Visualising Dziga Vertov's Work*. Cham: Springer Nature, 2019.

Heidegger, Martin. *Sein und Zeit*. Tübingen: Niemeyer, [11]1967 [originally published in 1927].

—. *Wegmarken*. Frankfurt am Main: Vittorio Klostermann, 1967.

Heinz, Marion, and Sidonie Kellerer (Eds.). *‚Schwarze Hefte': Eine philosophisch-politische Debatte*. Berlin: Suhrkamp, 2016.

Heller, Franziska. *Update! Film- und Mediengeschichte im Zeitalter der digitalen Reproduzierbarkeit*. Paderborn: Brill | Fink, 2020, online: <https://doi.org/10.30965/9783846764602>.

Hendel, Ronald. *Steps to a New Edition of the Hebrew Bible* (Text-Critical Studies; vol. 10). Atlanta: SBL Press, 2016.

Henry, Avril (Ed.). *Biblia pauperum: A Facsimile and Edition*. Aldershot: Scolar Press, 1987.

Herrn, Rainer. *Der Liebe und dem Leid: Das Institut für Sexualwissenschaft 1919–1933*. Berlin: Suhrkamp, 2022.

Hind, Arthur M. *An Introduction to a History of Woodcut with A Detailed Survey of Work Done in the Fifteenth Century* (vol. 1). Boston: Houghton Mifflin, 1935 [reprinted in London [et al.]: Dover, 1963].

Hirschfeld, Magnus. *Sexualpathologie: Ein Lehrbuch für Ärzte und Studierende*. Bonn: A. Marcus & E. Webers, 1918.

— (Ed.). *Jahrbuch für sexuelle Zwischenstufen* (vol. XIX/1,2). Leipzig: Max Spohr, 1919.

Hirschfeld, Magnus, and Hermann Beck. *Gesetze der Liebe: Aus der Mappe eines Sexualforschers*. Berlin: Neue Gesellschaft, 1927.

Hörnschemeyer, Jörg. *Textgenetische Prozesse in Digitalen Editionen*. Doctoral dissertation. University of Cologne, 2017, online: <http://nbn-resolving.de/urn:nbn:de:hbz:38-75446>.

Hollings, Christopher D. *Scientific Communication Across the Iron Curtain*. Cham [et al.]: Springer, 2015.

Holzberg, Niklas, and Horst Brunner. *Hans Sachs: Ein Handbuch*. Berlin / Boston: De Gruyter, 2020.

Hotson, Howard, and Thomas Wallnig (Eds.). *Reassembling the Republic of Letters in the Digital Age: Standards, Systems, Scholarship*. Göttingen: Göttingen University Press, 2019.

Høyrup, Jens. *Human Sciences: Reappraising the Humanities Through History and Philosophy*. Albany: State University of New York Press, 2000.

van Hulle, Dirk. *Textual Awareness: A Genetic Study of Late Manuscripts by Joyce, Proust, and Mann*. Ann Arbor: University of Michigan Press, 2004.

—. *Genetic Criticism: Tracing Creativity in Literature*. Oxford: Oxford University Press, 2022.

Hutchinson Guest, Ann. *Labanotation: The System of Analyzing and Recording Movement*. London / New York: Routledge, ⁴2005 [originally published in 1954].

Imamichi, Tomonobu. *In Search of Wisdom: One Philosopher's Journey*. Tokyo: International House of Japan, 2004.

Isekenmeier, Guido (Ed.). *Interpiktorialität: Theorie und Geschichte der Bild-Bild-Bezüge*. Bielefeld: transcript-Verlag, 2013.

Jacobs, Lea. *The Wages of Sin: Censorship and the Fallen Woman Film, 1928–1942*. Berkeley [et al.]: University of California Press, 1997.

Jakobi-Mirwald, Christine. *Buchmalerei: Terminologie in der Kunstgeschichte*. Berlin: Reimer, [4]2015.

Jannidis, Fotis (Ed.). *Rückkehr des Autors: Zur Erneuerung eines umstrittenen Begriffs* (Studien und Texte zur Sozialgeschichte der Literatur; vol. 71). Tübingen: Niemeyer, 1999.

Jansen, Leo, Hans Luijten and Nienke Bakker (Eds.). *Vincent van Gogh: The Letters*. Amsterdam / The Hague: Van Gogh Museum & Huygens ING, 2009.

Jay, Paul. *The Humanities 'Crisis' and the Future of Literary Studies*. Basingstoke [et al.]: Palgrave Macmillan, 2014.

Jewell, Helen M. *Women in Dark Age and Early Medieval Europe c. 500–1200*. Basingstoke: Palgrave Macmillan, 2006.

Jones, Steven E. *The Emergence of the Digital Humanities*. London / New York: Routledge, 2014.

Kabanov, Annette. *Ol'ga Michajlovna Frejdenberg, 1890–1955: Eine sowjetische Wissenschaftlerin zwischen Kanon und Freiheit* (Opera Slavica; vol. 41). Wiesbaden: Harrassowitz, 2002.

Kajewski, Bruce (Ed.). *Gadamer's Repercussions: Reconsidering Philosophical Hermeneutics*. Berkeley [et al.]: University of California Press, 2004.

Kanzog, Klaus. *Einführung in die Filmphilologie*. München: Diskurs-Film-Verlag Schaudig und Ledig, [2]1997.

Keats-Rohan, Katherine S. B. (Ed.). *Prosopography Approaches and Applications: A Handbook*. Oxford: Prosopographica et Genealogica, 2007.

von Keitz, Ursula, Wolfgang Lukas and Rüdiger Nutt-Kofoth (Eds.). *Kritische Film- und Literaturedition: Perspektiven einer transdisziplinären Editionswissenschaft* (editio / Beihefte; vol. 51). Berlin / Boston: De Gruyter, 2022, online: <https://doi.org/10.1515/9783110684605>.

Kemman, Max. *Trading Zones of Digital History* (Studies in Digital History and Hermeneutics; vol. 1). Berlin / Boston: De Gruyter, 2021, online: <https://doi.org/10.1515/9783110682106>.

Kemp, Wolfgang. *Christliche Kunst: Ihre Anfänge, ihre Strukturen*. München: Schirmer/Mosel, 1994.

Kermode, Frank. *The Classic: Literary Images of Permanence and Change*. Cambridge, Massachusetts [et al.]: Harvard University Press, 1983 [originally published in New York: Viking Press, 1975].

Kessler, Stephan. *Theories of Metaphor Revised: Against a Cognitive Theory of Metaphor. An Advocacy of Classical Metaphor*. Berlin: Logos, 2013.

Kim, Dorothy, and Jesse Stommel (Eds.). *Disrupting the Digital Humanities*. Santa Barbara: punctum, 2018.

Kittler, Friedrich. *Aufschreibesysteme 1800/1900*. München: Fink, 1985.

Kjørup, Søren. *Humanities – Geisteswissenschaften – Sciences humaines: Eine Einführung*, transl. by Elisabeth Bense. Stuttgart / Weimar: J.B. Metzler, 2001.

—. *Semiotik* (UTB für Wissenschaft; vol. 3039). Paderborn: Fink, 2009

Klaus, Georg. *Kybernetik und Erkenntnistheorie*. Berlin: Deutscher Verlag der Wissenschaften, 1966.

Klausnitzer, Ralf, Carlos Spoerhase and Dirk Werle (Eds.). *Ethos und Pathos der Geisteswissenschaften: Konfigurationen der wissenschaftlichen Persona seit 1750* (Historia Hermeneutica. Series Studia; vol. 12). Berlin / Boston: De Gruyter, 2015.

Kline, Ronald R. *The Cybernetics Moment: Or Why We Call Our Age the Information Age*. Baltimore: John Hopkins University Press, 2015.

König, Christoph, Hans-Harald Müller and Werner Röcke (Eds.). *Wissenschaftsgeschichte der Germanistik in Porträts*. Berlin / Boston: De Gruyter, 2012.

Kracauer, Siegfried, and Erwin Panofsky. *Siegfried Kracauer / Erwin Panofsky, Briefwechsel 1941–1966. Mit einem Anhang: Siegfried Kracauer 'Under the Spell of the Living Warburg Tradition'* (Schriften des Warburg-Archivs im Kunstgeschichtlichen Seminar der Universität Hamburg; vol. 4), ed. by Volker Breidecker. Berlin: Akademie-Verlag, 1996.

Kraft, Herbert (Ed.). *Schillers Werke: Nationalausgabe* (vol. 11: Demetrius). Weimar: Böhlau, 1971.

— (Ed.). *Schillers Werke: Nationalausgabe* (vol. 12: Dramatische Fragmente). Weimar: Böhlau, 1982.

Kragh, Helge. *The Early Reception of Bohr's Atomic Theory (1913–1915): A Preliminary Investigation* (Research Publications on Science Studies; vol. 9). Aarhus: Centre for Science Studies, University of Aarhus, 2010.

—. *Before Bohr: Theories of Atomic Structure 1850–1913* (Research Publications on Science Studies; vol. 10). Aarhus: Centre for Science Studies, University of Aarhus, 2010.

Krause, Karin, and Barbara Schellewald (Eds.). *Bild und Text im Mittelalter* (Sensus; vol. 2). Köln [et al.]: Böhlau, 2011.

Kreimeier, Klaus. *The Ufa Story: A History of Germany's Greatest Film Company, 1918–1945*, transl. by Robert and Rita Kimber. Berkeley [et al.]: University of California Press, 1999.

Kretschmer, Hildegard. *Lexikon der Symbole und Attribute in der Kunst*. Stuttgart: Reclam, ^{3}2018.

von Kries, Friedrich Wilhelm (Ed.). *Thomasin von Zerclaere: Der Welsche Gast* (Göppinger Arbeiten zur Germanistik; vol. 425,1–4). Göppingen: Kümmerle, 1984–1985.

Kubler, George. *The Shape of Time: The Shape of Time: Remarks on the History of Things*. New Haven / London: Yale University Press, ^{2}2008 [originally published in 1962].

Kühn, Clemens. *Formenlehre der Musik*. Kassel [et al.]: Bärenreiter, 1987.

Kuroczyński, Piotr, Mieke Pfarr-Harfst and Sander Münster (Eds.). *Der Modelle Tugend 2.0: Digitale 3D-Rekonstruktion als virtueller Raum der architekturhistorischen Forschung* (Computing in Art and Architecture; vol. 2). Heidelberg: arthistoricum.net, 2019.

Kusch, Martin. *Knowledge by Agreement: The Programme of Communitarian Epistemology*. Oxford: Clarendon Press, 2002.

Kwakkel, Erik. *Books Before Print*, York: Arc Humanities Press, 2018.

Lakoff, George, and Mark Johnson. *Metaphors We Live By*. Chicago: University of Chicago Press, 1980.

—. *Philosophy in the Flesh: The Embodied Mind and its Challenge to Western Thought*. New York: Basic Books, 1999.

Lane, Richard J. *The Big Humanities: Digital Humanities/Digital Laboratories*. London / New York: Routledge, 2016.

Laumond, Jean-Paul, and Naoko Abe (Eds.). *Dance Notations and Robot Motion* (Springer Tracts in Advanced Robotics; vol. 111). Cham [et al.]: Springer, 2016.

Lavrenova, Olga. *Spaces and Meanings: Semantics of the Cultural Landscape*. Cham: Springer Nature, 2019.

Leitch, Thomas (Ed.). *The Oxford Handbook of Adaptation Studies*. Oxford [et al.]: Oxford University Press, 2017.

Levine, Emily J. *Dreamland of Humanists: Warburg, Cassirer, Panofsky, and the Hamburg School*. Chicago: University of Chicago Press, 2013.

Lévi-Strauss, Claude. *Anthropologie structurale* (vol. 2). Paris: Plon, 1973.

Lewis, Suzanne. *Reading Images: Narrative Discourse and Reception in the Thirteenth-Century Illuminated Apocalypse*. Cambridge: Cambridge University Press, 1996.

Liepe, Lena (Ed.). *The Locus of Meaning in Medieval Art: Iconography, Iconology, and Interpreting the Visual Imagery of the Middle Ages*.

Kalamazoo: Medieval Institute Publications, Western Michigan University, 2018.

Liu, Alan. *Local Transcendence: Essays on Postmodern Historicism and the Database*. Chicago / London: University of Chicago Press, 2008.

Loock, Kathleen, and Constantine Verevis (Eds.). *Film Remakes, Adaptations and Fan Productions: Remake/Remodel*. Basingstoke [et al.]: Palgrave Macmillan, 2012.

Losh, Elizabeth, and Jacqueline Wernimont (Eds.). *Bodies of Information: Intersectional Feminism and Digital Humanities*. Minneapolis: University of Minnesota Press, 2018.

Lotman, Jurij M. *Semiotics of Cinema*, transl. by Mark E. Suino. Ann Arbor: University of Michigan Press, 1976.

—. *The Structure of the Artistic Text*, transl. by Ronald Vroon. Ann Arbor: University of Michigan, 1977.

—. *Universe of the Mind: A Semiotic Theory of Culture*, transl. by Ann Shukman. London / New York: I.B. Tauris, 1990.

Lowden, John. *The Octateuchs: A Study in Byzantine Manuscript Illustration*. Pennsylvania: Pennsylvania State University Press, 1992.

—. *The Making of the Bibles Moralisées* (2 vols.). University Park: Pennsylvania State University Press, 2000.

Luhrssen, David. *Mamoulian: Life on Stage and Screen*. Lexington: University Press of Kentucky, 2013.

Lutz, Eckart Conrad, Vera Jerjen and Christine Putzo (Eds.). *Diagramm und Text: Diagrammatische Strukturen und die Dynamisierung von Wissen und Erfahrung*. Wiesbaden: Reichert, 2014.

Lutz, Jules, and Paul Perdrizet (Eds.). *Speculum humanae salvationis* (vol. 1). Mülhausen: Meininger, 1907.

Lvoff, Basil. *The Problem of Literary Development in Russian Formalism and Digital Humanities* (CUNY Academic Works). Dissertation, 2020, online: <https://academicworks.cuny.edu/gc_etds/3881> (accessed 8 February 2023).

Maas, Paul. *Textkritik*. Leipzig: Teubner, 1927.

Makkreel, Rudolf. *Dilthey: Philosopher of the Human Studies*. Princeton: Princeton University Press, ³1992 [originally published in 1975].

Maltby, Richard, Daniël Biltereyst and Philippe Meers (Eds.). *Explorations in New Cinema History: Approaches and Case Studies*. Malden [et al.]: Wiley Blackwell, 2011.

Mancinelli, Tiziana, and Elena Pierazzo. *Che cos'è un'edizione scientifica digitale*. Rome: Carocci, 2020.

Marks, Martin Miller. *Music and the Silent Film: Contexts and Case Studies, 1895–1924*. Oxford [et al.]: Oxford University Press, 1997.

Martin, Henri-Jean (Ed.). *Mise en page et mise en texte du livre manuscript*. Paris: Ed. du Cercle de la Librairie, 1990.

Matschinegg, Ingrid [et al.]. *Daten neu verknoten: Die Verwendung einer Graphdatenbank für die Bilddatenbank REALonline* (DARIAH-DE Working Papers; vol. 31). Göttingen: Dokumenten- und Publikationsserver der Georg-August-Universität, 2019, online: <http://nbn-resolving.org/urn:nbn:de:gbv:7-dariah-2019-3-5>.

May, Reinhard. *Heideggers verborgene Quellen: Sein Werk unter chinesischem und japanischem Einfluss. Im Anhang: Tomio Tezuka, Eine Stunde bei Heidegger. Japanisch/Deutsch*. Wiesbaden: Harrassowitz, ²2014 [originally published as *Ex Oriente Lux: Heideggers Werk unter ostasiatischem Einfluß*, Stuttgart: Franz Steiner, 1989].

—. *Heidegger's Hidden Sources: East Asian Influences on His Work*, transl. by Graham Parkes. London / New York: Routledge, 1996.

McCarty, Willard. *Humanities Computing*. Basingstoke [et al.]: Palgrave Macmillan, 2005.

McClary, Susan. *Georges Bizet: Carmen*. Cambridge: Cambridge University Press, 1992.

McGann, Jerome J. *The Textual Condition*. Princeton: Princeton University Press, 1991.

McGinn, Bernard. *Visions of the End: Apocalyptic Traditions in the Middle Ages*. New York [et al.]: Columbia University Press, 1979.

McKitterick, David. *Old Books, New Technologies: The Representation, Conservation and Transformation of Books Since 1700*. Cambridge: Cambridge University Press, 2013.

McLuhan, Marshall. *Understanding Media: The Extensions of Man*. London: Routledge & Paul, 1964.

Meier, Christel, and Uwe Ruberg (Eds.). *Text und Bild: Aspekte des Zusammenwirkens zweier Künste im Mittelalter und früher Neuzeit*. Wiesbaden: Reichert, 1980.

Millet, Hélène. *Les successeurs du pape aux ours: Histoire d'un livre prophétique médiéval illustré (Vaticinia de summis pontificibus)*. Turnhout: Brepols, 2004 [originally published as *Il libro delle immagini dei papi: Storia di un testa profetico medievale*, transl. by Cristina Colotto, Rome: Viella, 2002].

Mitcham, Carl. *Thinking Through Technology: The Path Between Engineering and Philosophy*. Chicago: University of Chicago Press, 1994.

Mitchell, Andrew J., and Peter Trawny (Eds.). *Heidegger's Black Notebooks: Responses to Anti-Semitism*. New York / Chichester: Columbia University Press, 2017.

Möhring, Hannes. *Der Weltkaiser der Endzeit: Entstehung, Wandel und Wirkung einer tausendjährigen Weissagung* (Mittelalter-Forschungen; vol. 3). Stuttgart: Thorbecke, 2000.

Möller, Kirsten, Inge Stephan and Alexandra Tacke (Eds.). *Carmen: Ein Mythos in Literatur, Film und Kunst*. Köln [et al.]: Böhlau, 2011.

Moretti, Franco. *Graphs, Maps, Trees: Abstract Models for a Literary History*. London [et al.]: Verso, 2005.

—. *Distant Reading*. London [et al.]: Verso, 2013.

Müller, Kathrin. *Visuelle Weltaneignung: Astronomische und kosmologische Diagramme in Handschriften des Mittelalters*. Göttingen: Vandenhoeck & Ruprecht, 2008, 203–252.

Munro, Lucy. *Shakespeare in the Theatre: The King's Men*. London [et al.]: Bloomsbury, 2020.

Neuber, Matthias (Ed.). *Fiktion und Fiktionalismus: Beiträge zu Hans Vaihingers Philosophie des Als Ob* (Studien und Materialien zum Neukantianismus; vol. 33). Würzburg: Königshausen & Neumann, 2014.

Newman, Barnett. *Selected Writings and Interviews*, ed. by John Philip O'Neill and Mollie McNickle. Berkeley [et al.]: University of California Press, 1992.

Nichols, Stephen G. *From Parchment to Cyberspace: Medieval Literature in the Digital Age*. New York [et al.]: Peter Lang, 2016.

Nielsen, Melinda (Ed.). *An Illustrated Speculum Humanae Salvationis: Green Collection Ms 000321*. Leiden [et al.]: Brill, 2022.

Niesner, Manuela. *Das Speculum humanae salvationis der Stiftsbibliothek Kremsmünster: Edition der mittelhochdeutschen Versübersetzung und Studien zum Verhältnis von Bild und Text* (Pictura et poesis; vol. 8). Köln [et al.]: Böhlau, 1995.

Nowak, Kai. *Projektionen der Moral: Filmskandale in der Weimarer Republik*. Göttingen: Wallstein, 2015, 96–140.

Nyhan, Julianne. *Hidden and Devalued Feminized Labour in the Digital Humanities: On the Index Thomisticus Project 1954-67*. London / New York: Routledge, 2022.

Oberhoff, Andreas. *Digitale Editionen im Spannungsfeld des Medienwechsels: Analysen und Lösungsstrategien aus Sicht der Informatik.* Bielefeld: transcript, 2021.

O'Brien, Mahon. *Heidegger, History and the Holocaust*. New York [et al.]: Bloomsbury Academic, 2015.

Orozco, Teresa. *Platonische Gewalt: Gadamers politische Hermeneutik der NS-Zeit*. Hamburg/Berlin: Argument, 1995.

Oscherwitz, Dayna and MaryEllen Higgins. *The A to Z of French Cinema*. Lanham [et al.]: Scaregrow Press, 2009.

Ottmann, Henning. *Geschichte des politischen Denkens*. Stuttgart: J.B. Metzler, 2004, online <https://doi.org/10.1007/978-3-476-02911-9_7>.

Paden, William Doremus (Ed.). *The Future of the Middle Ages: Medieval Literature in the 1990s*. Gainesville: University Press of Florida, 1994.

Panofsky, Erwin. *The Life and Art of Albrecht Dürer*. Princeton: Princeton University Press, [4]1955 [originally published in three volumes in 1943].

—. *Deutschsprachige Aufsätze* (Studien aus dem Warburg-Haus; vol. 1,2), ed. by Karen Michels and Martin Warnke. Berlin: Akademie-Verlag, 1998.

—. *Korrespondenz 1910 bis 1968: Eine kommentierte Auswahl in fünf Bänden* (vol. 4: Korrespondenz von 1957 bis 1961), ed. by Dieter Wuttke. Wiesbaden: Harrassowitz, 2008.

Parsons, Keith. *The Science Wars: Debating Scientific Knowledge and Technology*. Amherst, New York: Prometheus Books, 2003.

Pasquali, Giorgio. *Storia della tradizione e critica del testo*. Firenze: Le Monnier, 1934.

Patschovsky, Alexander (Ed.). *Die Bildwelt der Diagramme Joachims von Fiore: Zur Medialität religiös-politischer Programme im Mittelalter*. Ostfildern: Thorbecke, 2003.

Patterson, Lyman Ray. *Copyright in Historical Perspective*. Nashville: Vanderbilt University Press, 1968.

Peters, Ursula. *Das Ich im Bild: Die Figur des Autors in volkssprachigen Bilderhandschriften des 13. bis 16. Jahrhunderts* (Pictura et poesis; vol. 22). Köln [et al.]: Böhlau, 2008.

Pierazzo, Elena. *Digital Scholarly Editing: Theories, Models and Methods*. London / New York: Routledge, 2016 [first published by Farnham, Surrey [et al.]: Ashgate, 2015].

van der Pot, Johan Hendrik Jacob. *Sinndeutung und Periodisierung der Geschichte: Eine systematische Übersicht der Theorien und Auffassungen*. Leiden [et al.]: Brill, 1999.

Prauss, Gerold. *Kant und das Problem der Dinge an sich* (Abhandlungen zur Philosophie, Psychologie und Pädagogik; vol. 90). Bonn: Bouvier, 1974.

—. *Die Einheit von Subjekt und Objekt: Kants Probleme mit den Sachen selbst*. Freiburg / München: Karl Alber, 2015.

Prawer, Siegbert Salomon. *Between Two Worlds: The Jewish Presence in German and Austrian Film, 1910–1933*. New York: Berghahn Books, 2007.

Price, Nicholas Stanley, Mansfield Kirby Talley and Alessandra Melucco Vaccaro (Eds.). *Historical and Philosophical Issues in the Conservation of Cultural Heritage*. Los Angeles: The Getty Conservation Institute, 1996.

Пруденко, Янина. *Кибернетика в гуманитарных искусствах и науках СССР.* Москва́: Гараж, 2019 [Prudenko, Yanina. *Cybernetics in Humanities and Arts in the USSR*. Moscow: Garage, 2019].

Quenzer, Jörg, Dmitry Bondarev and Jan-Ulrich Sobisch (Eds.). *Manuscript Cultures: Mapping the Field*. Berlin / Boston: De Gruyter, 2014.

Rathgeber, Benjamin. *Modellbildung in den Kognitionswissenschaften* (Hermeneutik und Anthropologie; vol. 4). Münster: LIT, 2011.

Read, Paul, and Mark-Paul Meyer (Eds.). *Restoration of Motion Picture Film*. Oxford [et al.]: Butterworth-Heinemann, 2000.

Reeves, Marjorie. *The Influence of Prophecy in the Later Middle Ages: A Study in Joachimism*. Oxford: Clarendon Press, 1969.

Rehm, Sabine. *Spiegel der Heilsgeschichte: Typologische Bildzyklen in der Glasmalerei des 14. bis 16. Jahrhunderts im deutschsprachigen Raum* (Europäische Hochschulschriften / 28; vol. 349). Frankfurt am Main [et al.]: Peter Lang, 1999.

Renz, Johannes, and Wolfgang Röllig. *Handbuch der althebräischen Epigraphik* (3 vols.). Darmstadt: WBG, ²2016.

Renzi, Thomas C. *Jules Verne on Film: A Filmography of the Cinematic Adaptations of his Works, 1902 through 1997*. Jefferson, North Carolina: McFarland, 1998.

Riedl, Matthias. *Joachim von Fiore: Denker der vollendeten Menschheit*. Würzburg: Königshausen & Neumann, 2004.

— (Ed.). A *Companion to Joachim of Fiore* (Brill's Companions to the Christian Tradition; vol. 75). Leiden [et al.]: Brill, 2017.

Risam, Roopika. *New Digital Worlds: Postcolonial Digital Humanities in Theory, Praxis, and Pedagogy*. Evanston, Illinois: Northwestern University Press, 2018.

Rischpler, Susanne. *Biblia sacra figuris expressa: Mnemotechnische Bilderbibeln des 15. Jahrhunderts* (Wissensliteratur im Mittelalter; vol. 36). Wiesbaden: Reichert, 2001.

Ritchie, Donald A. (Ed.). *The Oxford Handbook of Oral History*. Oxford: Oxford University Press, 2012.

Robertson-von Trotha, Caroline Y. and Ralf H. Schneider (Eds.). *Digitales Kulturerbe: Bewahrung und Zugänglichkeit in der wissenschaftlichen Praxis*. Karlsruhe: KIT Scientific Publishing, 2015.

Rockwell, Geoffrey, and Stéfan Sinclair. *Hermeneutica: Computer-Assisted Interpretation in the Humanities*. Cambridge, Massachusetts / London: MIT Press, 2022.

Rodi, Frithjof. *Erkenntnis des Erkannten: Zur Hermeneutik des 19. und 20. Jahrhunderts*. Frankfurt am Main: Suhrkamp, 1990.

Roelli, Philipp (Ed.). *Handbook of Stemmatology: History, Methodology, Digital Approaches*. Berlin / Boston: De Gruyter, 2020.

Rowe, David E. *A Richer Picture of Mathematics: The Göttingen Tradition and Beyond*. Cham: Springer, 2018, 81–94.

Sahle, Patrick. *Digitale Editionsformen* (Schriften des Instituts für Dokumentologie und Editorik; vols. 7–9). Norderstedt: Books on Demand, 2013.

Sakoparnig, Andrea, Andreas Wolfsteiner and Jürgen Bohm (Eds.). *Paradigmenwechsel: Wandel in den Künsten und Wissenschaften*. Berlin / Boston: De Gruyter, 2014.

Saurma, Lieselotte E. *Die Miniaturen im ‚Liber scivias' der Hildegard von Bingen: Die Wucht der Vision und die Ordnung der Bilder*. Wiesbaden: Reichert, 1998.

—. *Spätformen mittelalterlicher Buchherstellung: Bilderhandschriften aus der Werkstatt Diebold Laubers in Hagenau* (2 vols.). Wiesbaden: Reichert, 2001.

Schilp, Thomas, and Caroline Horch (Eds.). *Memoria – Erinnerungskultur – Historismus: Zum Gedenken an Otto Gerhard Oexle (28. August 1939 – 16. Mai 2016)*. Turnhout: Brepols, 2019.

Schmidt, Gerhard. *Die Armenbibeln des XIV. Jahrhunderts*. Graz [et al.]: Böhlau, 1959.

Schmitt, Martin. *Internet im Kalten Krieg: Eine Vorgeschichte des globalen Kommunikationsnetzes*. Bielefeld: transcript, 2016.

Schmolinsky, Sabine. *Der Apokalypsenkommentar des Alexander Minorita: Zur frühen Rezeption Joachims von Fiore in Deutschland* (MGH Studien und Texte; vol. 3). Hannover: Hahn, 1991.

Schneider, Karin. *Paläographie und Handschriftenkunde für Germanisten: Eine Einführung* (Sammlung kurzer Grammatiken germanischer Dialekte. B: Ergänzungsreihe; vol. 8). Berlin / Boston: De Gruyter, 2014.

Schönberg, Arnold. *Fundamentals of Musical Composition*, ed. by Gerald Strang in collaboration with Leonard Stein. London: Faber, 1967.

Schönfeld, Christiane. *The History of German Literature on Film*. London [et al.]: Bloomsbury, 2023.

Schönfeld, Hildegard (Ed.). *Scivias: Die Miniaturen vom Rupertsberg*. Bingen: Pennrich, 1979.

Schröter, Jens, and Alexander Böhnke (Eds.). *Analog/Digital – Opposition oder Kontinuum? Zur Theorie und Geschichte einer Unterscheidung*. Bielefeld: transcript, 2004.

Schwab, Gabriele. *Haunting Legacies: Violent Histories and Transgenerational Trauma*. New York: Columbia University Press, 2010.

Sears, Elizabeth, Thelma K. Thomas and Ilene H. Forsyth (Eds.). *Reading Medieval Images: The Art Historian and the Object*. Ann Arbor: University of Michigan Press, 2002.

Segerstråle, Ullica (Ed.). *Beyond the Science Wars: The Missing Discourse about Science and Society*. New York: State University of New York Press, 2000.

Seyfarth, Jutta (Ed.). *Speculum virginum* (Corpus Christianorum, Continuatio Medievalis; vol. 5). Turnhout: Brepols, 1990.

Shillingsburg, Peter L. *Scholarly Editing in the Computer Age: Theory and Practice*. Ann Arbor: University of Michigan Press, 1996.

—. *From Gutenberg to Google: Electronic Representations of Literary Texts*. Cambridge: Cambridge University Press, 2006.

Shiner, Larry. *The Invention of Art: A Cultural History*. Chicago: University of Chicago Press, 2001.

Sikov, Ed. *On Sunset Boulevard: The Life and Times of Billy Wilder*. Jackson: University Press of Mississippi, 2017.

Slide, Anthony. *Nitrate Won't Wait: A History of Film Preservation in the United States*. Jefferson, North Carolina: McFarland, 1992.

Smiraglia, Richard P., Pat Riva and Maja Žumer (Eds.). *The FRBR Family of Conceptual Models: Toward a Linked Bibliographic Future*. London / New York: Routledge, 2013.

Smithies, James. *The Digital Humanities and the Digital Modern*. London: Palgrave Macmillan, 2017.

Solomon, Aubrey. *The Fox Film Corporation, 1915–1935: A History and Filmography.* Jefferson, North Carolina: McFarland, 2011.

Stachowiak, Herbert. *Allgemeine Modelltheorie*. Wien [et al.]: Springer, 1973.

Stadler, Friedrich. *Der Wiener Kreis: Ursprung, Entwicklung und Wirkung des Logischen Empirismus im Kontext*. Cham: Springer, 2015.

Steakley, James. *Anders als die Andern: Ein Film und seine Geschichte*. Hamburg: Männerschwarm, 2007.

Stein, Edith. *Zum Problem der Einfühlung*. Halle: Buchdruckerei des Waisenhauses, 1917, 129 [originally submitted as part II/IV of her dissertation in 1916 under the title *Das Einfühlungsproblem in seiner historischen Entwicklung und in phänomenologischer Betrachtung*].

Stern, David G. *Wittgenstein on Mind and Language*. Oxford [et al.]: Oxford University Press, 1995.

Штофф, Виктор Александрович. *Моделирование и философия*. Москва́ / Ленинград: Наука, 1966 [Štoff, Victor Aleksandrovič. *Modelling and Philosophy*. Moscow / Leningrad: Science, 1966].

—. *Modellierung und Philosophie*, transl. by Siegfried Wollgast. Berlin: Akademie-Verlag, 1969 [reprinted in 2022, online: <https://doi.org/10.1515/9783112645406>].

Stolz, Michael, and Yen-Chun Chen (Eds.). *Internationalität und Interdisziplinarität der Editionswissenschaft* (editio / Beihefte; vol. 38). Berlin / Boston: De Gruyter, 2014.

Stroh, Friedrich. *Handbuch der germanischen Philologie*. Berlin: De Gruyter, 1985 [originally published in 1952].

Stueber, Karsten. *Rediscovering Empathy: Agency, Folk Psychology, and the Human Sciences*. Cambridge, Massachusetts / London: MIT Press, 2010 [paperback; hardcover published in 2006].

Suppanz, Franz. *Person und Staat in Schillers Dramenfragmenten: Zur literarischen Rekonstruktion eines problematischen Verhältnisses* (Hermaea. Neue Folge; vol. 93). Berlin: De Gruyter, ²2010.

Svensson, Patrick. *Big Digital Humanities: Imagining a Meeting Place for the Humanities and the Digital*. Ann Arbor: University of Michigan Press, 2016.

Tamm, Marek (Ed.). *Juri Lotman – Culture, Memory and History: Essays in Cultural Semiotics. Translated from the Russian by Brian James Baer*. London: Palgrave Macmillan, 2019.

Taylor, R. E., and Ofer Bar-Yosef. *Radiocarbon Dating: An Archaeological Perspective*. London / New York: Routledge, ²2014.

Thompson, Leonard L. *The Book of Revelation: Apocalypse and Empire*. Oxford [et al.]: Oxford University Press, 1990.

Timpanaro, Sebastiano. *The Genesis of Lachmann's Method*, transl. and ed. by Glenn W. Most. Chicago / London: University of Chicago Press, 2005 [originally published as *La genesi del metodo del Lachmann*, Firenze: Le Monnier, 1963].

Toon, Adam. *Models as Make-Believe: Imagination, Fiction and Scientific Representation*. Basingstoke [et al.]: Palgrave Macmillan, 2012.

Tov, Emanuel. *Textual Developments: Collected Essays. Volume 4* (Supplements to Vetus Testamentum; vol. 181). Leiden [et al.]: Brill, 2019.

Trawny, Peter. *Heidegger-Fragmente: Eine philosophische Biographie*. Frankfurt am Main: S. Fischer, 2018.

Trovato, Paolo. *Everything You Always Wanted to Know about Lachmann's Method*. Padova: libreriauniversitaria.it, 2014.

Ulmann, Bernd. *Analog Computing*. München: Oldenbourg, 2013.

—. *Analog and Hybrid Computer Programming*. Berlin / Boston: De Gruyter, 2020.

Vaihinger, Hans. *Die Philosophie des Als Ob: System der theoretischen, praktischen und religiösen Fiktionen der Menschheit auf Grund eines idealistischen Positivismus – Mit einem Anhang über Kant und Nietzsche*. Berlin: Reuther & Reichard, 1911.

Vattimo, Gianni, and Pier Aldo Rovatti (Eds.). *Il pensiero debole*. Milano: Feltrinelli, 1983.

Viola, Lorella. *The Humanities in the Digital: Beyond Critical Digital Humanities*. Cham: Palgrave Macmillan, 2023, online: <https://doi.org/10.1007/978-3-031-16950-2>.

Wachtel, Alois (Ed.). *Alexander Minorita: Expositio in Apocalysim* (MGH Quellen zur Geistesgeschichte des Mittelalters; vol. 1). Weimar: Böhlau, 1955.

Wahl, Chris. *Sprachversionsfilme aus Babelsberg: Die internationale Strategie der Ufa 1929–1939*. München: edition text+kritik, 2009.

—. *Multiple Language Versions Made in Babelsberg: Ufa's International Strategy, 1929–1939*, transl. by Steve Wilder. Amsterdam: Amsterdam University Press, 2016.

Wannenmacher, Julia Eva (Ed.). *Joachim of Fiore and the Influence of Inspiration: Essays in Memory of Marjorie E. Reeves (1905–2003)*. London: Routledge, 2013.

Warburg, Aby M. *Heidnisch-antike Weissagung in Wort und Bild zu Luthers Zeiten* (Sitzungsberichte der Heidelberger Akademie der Wissenschaften, Philosophisch-Historische Klasse; vol. 1919/26). Heidelberg: Winter, 1920 [reprinted in Aby M. Warburg, *Ausgewählte Schriften und Würdigungen* (Saecvla spiritalia; vol. 1), ed. by Dieter Wuttke, Baden-Baden: Koerner, ^{3}1992, 199–304].

WARTOFSKY, Marx W. *Models: Representation and the Scientific Understanding*, ed. by Robert S. Cohen. Dordrecht: Springer, 1979.

WEIGEL, Harald. *„Nur was du nie gesehn wird ewig dauern": Carl Lachmann und die Entstehung der wissenschaftlichen Edition*. Freiburg im Breisgau: Rombach, 1989.

WEI-MING, Tu. *Centrality and Commonality: An Essay on Confucian Religiousness*. Albany: State University of New York Press, 1989.

WEITZMANN, Kurt. *Illustrations in Roll and Codex: A Study of the Origin and Method of Text Illustration*. Princeton: Princeton University Press, 1947.

WELS, Andrea. *Die Fiktion des Begreifens und das Begreifen der Fiktion: Dimensionen und Defizite der Theorie der Fiktionen in Hans Vaihingers Philosophie des Als Ob* (Europäische Hochschulschriften: Reihe 20, Philosophie; vol. 539). Frankfurt am Main [et al.]: Peter Lang, 1997.

WELSCH, Tricia. *Gloria Swanson: Ready for her Close-Up*. Jackson: University Press of Mississippi, 2013.

WENIGER, Kay. *'Es wird im Leben dir mehr genommen als gegeben...' Lexikon der aus Deutschland und Österreich emigrierten Filmschaffenden 1933 bis 1945: Eine Gesamtübersicht*. Hamburg: Abacus, 2011.

WENZEL, Horst, and C. Stephen JAEGER (Eds.). *Visualisierungsstrategien in mittelalterlichen Bildern und Texten*. Berlin: Erich Schmidt, 2006.

WENZLHUEMER, Ronald (Ed.). *Counterfactual Thinking as a Scientific Method* (Historical Social Research; special issue 34.2). Köln: Gesis, 2009.

WHITE, Hayden. *Metahistory: The Historical Imagination in Nineteenth-Century Europe*. Baltimore: John Hopkins University Press, 2014, 135–162 [fortieth-anniversary edition; originally published in 1973].

WICHMANN, Siegfried. *Carl Spitzweg: Verzeichnis der Werke; Gemälde und Aquarelle*. Stuttgart: Belser, 2002.

WILF, Steven (Ed.). *Intellectual Property Law and History*. London / New York: Routledge, 2017.

WILLIAMS, John. *Visions of the End in Medieval Spain: Catalogue of Illustrated Beatus Commentaries on the Apocalypse and Study of the Geneva Beatus*, ed. by Therese Martin. Amsterdam: Amsterdam University Press, 2017.

WILLIAMS, Tony. *John Woo's Bullet in the Head*. Hong Kong: Hong Kong University Press, 2009.

WIMMER, Hanna, Malena RATZKE and Bruno REUDENBACH (Eds.). *Studien zur Biblia pauperum* (Vestigia bibliae; vol. 34). Bern [et al.]: Peter Lang, 2016.

WINOGRAD, Terry, and Fernando FLORES. *Understanding Computers and Cognition: A New Foundation for Design*. Norwood: Ablex, ^{5}1990 [originally published in 1986].

WIRTH, Günther. *Auf dem „Turnierplatz" der geistigen Auseinandersetzungen: Arthur Liebert und die Kantgesellschaft (1918–1948/49)*. Ludwigsfelde: Ludwigsfelder Verlagshaus, 2004.

WIßMANN, Friederike, Thomas AHREND and Heinz von LOESCH (Eds.). *'Vom Erkennen des Erkannten:' musikalische Analyse und Editionsphilologie* (Festschrift für Christian Martin Schmidt). Wiesbaden [et al.]: Breitkopf & Härtel, 2007.

WITTENAUER, Volker. *Die Bibliothekspolitik der Bibliothèque Nationale et Universitaire de Strasbourg, dargestellt am Projekt der Retrokonversion des Zettelkatalogs der deutschen Zeit (1870–1918)*. Heidelberg: Universitätsbibliothek Heidelberg, 2005.

WOESSNER, Martin. *Heidegger in America*. Cambridge: Cambridge University Press, 2010.

WOLF, Johanna. *Kontinuität und Wandel der Philologien: Textarchäologische Studien zur Entstehung der Romanischen Philologie im 19. Jahrhundert* (Romanica Monacensia). Tübingen: Narr, 2012.

WORM, Andrea. *Geschichte und Weltordnung: Graphische Modelle von Zeit und Raum in Universalchroniken vor 1500*. Berlin: Deutscher Verlag für Kunstwissenschaft, 2021.

WURM, Barbara (Eds.). *Digital Formalism: Die kalkulierten Bilder des Dziga Vertov* (Maske und Kothurn; vol. 55/3). Wien: Böhlau, 2009.

Wyss, Beat. *Ein Druckfehler: Panofsky versus Newman – verpasste Chancen eines Dialogs*. Köln: König, 1993 [also published as Beat Wyss, "Ein Druckfehler," in: *Erwin Panofsky: Beiträge des Symposiums Hamburg 1992* (Schriften des Warburg-Archivs im Kunstgeschichtlichen Seminar der Universität Hamburg; vol. 3), ed. by Bruno Reudenbach, Berlin: Akademie-Verlag, 1994, 191–199].

Wyss, Ulrich. *Die wilde Philologie: Jacob Grimm und der Historismus*. München: C.H. Beck, 1979.

Volhard, Jakob. *Justus von Liebig* (vol. 1). Leipzig: Johann Ambrosius Barth, 1909.

Zumthor, Paul. *Essai de poétique médiévale*. Paris: Éditions du Seuil, 1972.

van Zundert, Joris. *Scholarship in Interaction: Case Studies at the Intersection of Codework and Textual Scholarship*. Doctoral dissertation. Leiden University, 2022, online: <https://hdl.handle.net/1887/3464403>.

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