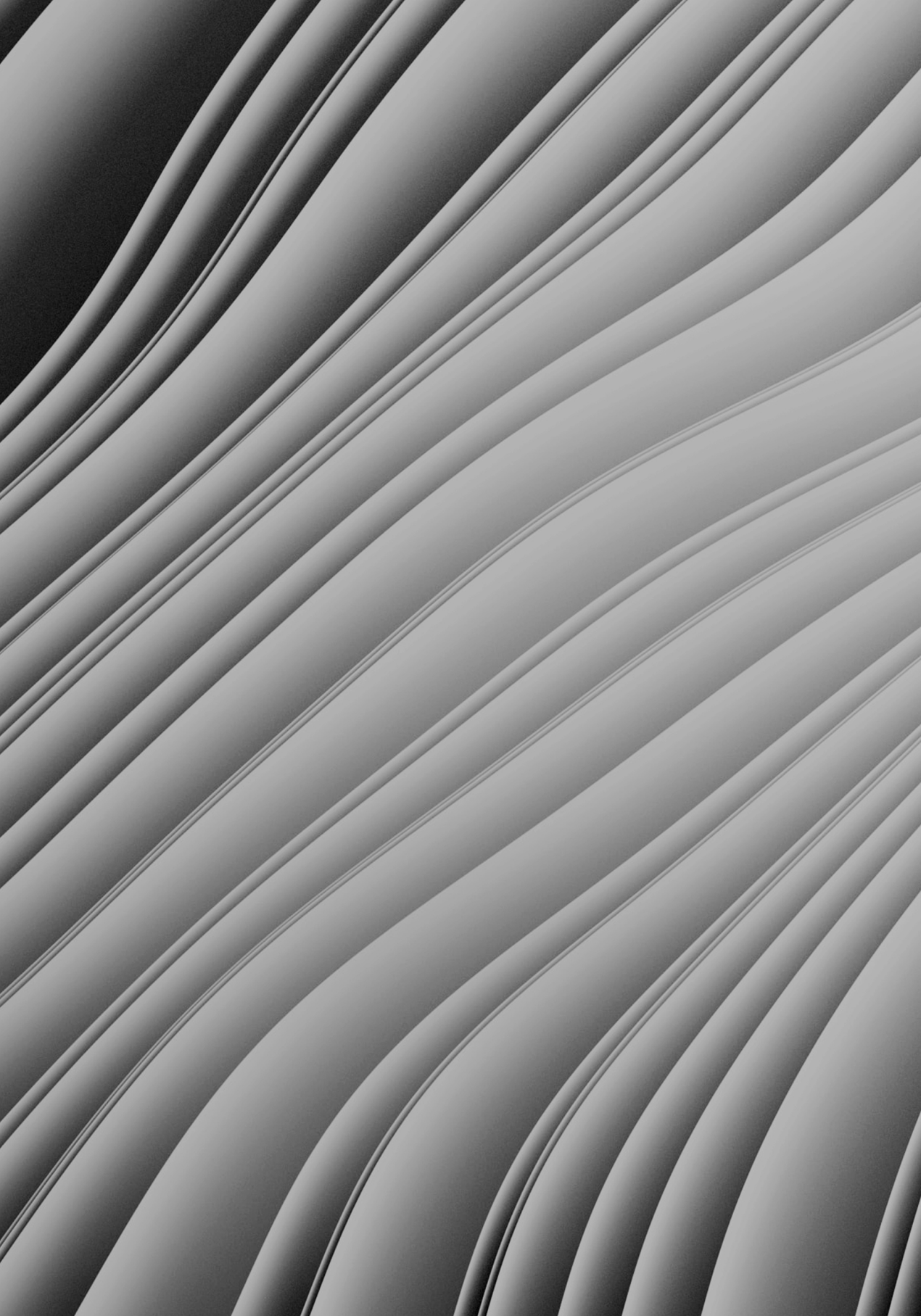

VI superstructures

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.

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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

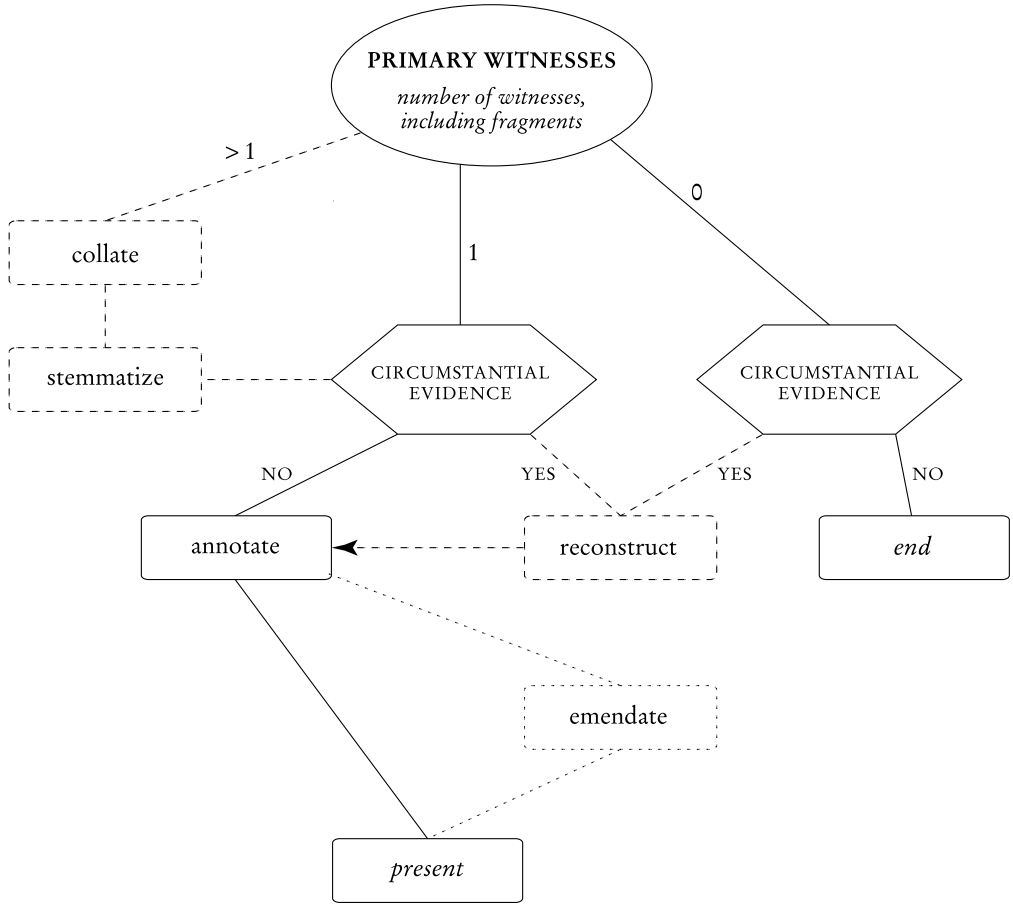

FIG. 51: Example of an editorial decision tree.

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*.