

On the Practice of Computational Theology

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Abstract This essay provides an overview of the recent research field “Computational Theology.” The terminology associated with this field will first be examined in more detail. The task of Computational Theology is to address theological research questions using the tools found in the Digital Humanities. However, in this context, what does Digital Humanities mean and what concept of theology funds this complex of phenomena? Computational Theology and Digital Theology come from different academic fields. Consideration of concrete practices shapes the research field itself. Thus, in the second part of the essay, a field analysis is performed to glean insight into the concept of Computational Theology.*

Keywords Computational Theology, Digital Theology, Theology, Religious Studies, Digital Humanities, Computational Humanities

1. Doing Computational Theology? A Survey of the Field

1.1 Terminology

Belonging to the field of Computational Theology is primarily a claim about methodology and a description of certain research practices. Theological questions are dealt with by means of Digital Humanities (DH). The ambivalent concept of DH can be specified as aligning more with what Ramsay labels type 1 as opposed to type 2:

Ramsay argues that Type 1 digital humanities (DH) is ‘united not by objects of study, per se, but by a set of practices that most regarded as intimately related: text encoding, archive creation, text analysis, historical gis, 3d modeling of archaeological sites, art historical cataloging, visualization,’ and general meditation on what all of these new ‘affordances might mean for the study of the human record.’ He explained that ‘Type 1 DH is [a] community’ and ‘in early 2001, this community fatefully decided to call itself

* This chapter, including quotations in foreign languages, was translated from German by Brandon Watson.

“digital humanities,” as humanities computing sounded like a ‘campus technical support group.’ Ramsay argues that ‘digital humanities’ is ‘useful because it distinguished our activity from media.’

With Type 2, on the other hand, Ramsay argues that ‘I don’t know exactly how it happened [...] Media studies practitioners were digital humanists; people who had devoted several decades to digital pedagogy were digital humanists; cultural critics who were interested in Internet culture were digital humanists; and digital artists of a certain variety were digital humanists.’ The resultant confusion of disciplinary identity, for Ramsay ‘sounds like the recreation of the humanities itself after some technological event horizon.’ Type 2 digital humanities, then, is a more expansive notion, including media theory, cultural critique, media and communications, etc. (Berry & Fagerjord 2017, 36f., which refers to a no longer existent Blog post by Stephen Ramsay).

Computational Theology thus refers to a sub-area of Digital Theology,¹ which does not necessarily have to be classified as Computational Theology, as Digital Theology can also be used to practice type 2 of the DH. Computational Theology can also overlap with the field of Digital Religion, such as when religion in social media is examined with the help of programming techniques.² In practice, however, the goals of Digital Religion are much broader. The term Digital Religion is used to describe and reflect on “religious practices in the digital realm” (van Oorschot 2023, 17).³ The focus of this broader field is much more on contemporary theology. Raffety’s perspective in the previous chapter can also be situated in the field of Digital Religion (p. 55): “[A]ny definition of computational theology needs to enumerate how humans and methods interact with both God and technology. Failure to do so is unethical, imprecise, and even anti-theological.” According to Raffety, Computational Theology is a subcategory of theology in the digital realm. However, this interpretation limits the potential epistemological scope of this research approach, as Karcher (2020, 133) asserts in a definition of Digital Theology:

The problem with this approach is [...] the narrow understanding of theology, which is focused exclusively on religious phenomena in the digital space and the religious practice. If digital theology is defined exclusively as a new way of reflecting exclusively on practical theological phenomena as theology of/in the digital, all other theological disciplines – if not excluded *per se* from digital work – are forced to adopt a religious-practical dimension.

1 That Computational Theology occurs within the context of Digital Theology is particularly evident in the methods presented in Sutinen & Cooper (2021, 61–90), which can also be largely attributed to the repertoire of the DH methods.

2 On a machine-learning approach to analysing the use of religious Twitter hashtags, see Veidlinger (2022, 132–140).

3 Cf. Campbell & Tsuria (2022) for a comprehensive overview of Digital Religion.

The different understandings of theology presented by Raffety and Karcher is a result of diverging academic backgrounds. Karcher's European perspective on theology is influenced by Schnelle (2021, 39): "Theology is the academic (orig. "wissenschaftliche") reflection on the content and practice of a religion, the consideration and thought about religious claims about God, humanity, and the world." Religion is therefore primarily the object of study of an academic discipline. From an Anglo-Saxon perspective, the objective of theology could be described as "religious studies," which is distinguished from "theology:"

[T]heology is a study – of something else, say, God, or of how to talk about God, or of how God talks. And it is the study of God in the Latin sense, with passion – for to 'study' theology in the primary sense of the expression is to do theology [...] you don't practise religion by studying it, as you practise Islam by doing Islamic theology, or practise Christianity by doing Christian theology (Turner 2005, 26).

A religiously practical dimension is inherent to Anglo-Saxon Digital Theology.⁴ Understanding the inherent practical aspects makes Raffety's claim understandable. From within this tradition, Raffety also applies a similar standard to Computational Theology. Consequently, Piotrowski's understanding of the relationship between DH and Computational Humanities presented in this volume can also be expressed in the internal theological discourse. The term "Computational Theology" is not only based on the Computational Humanities in that the technical aspects are emphasized, but the differences result analogously from different academic cultures. At this point, however, two potential objections must be addressed that could call into question the meaning of new terminology.

1. Why not use "Digital Religious Studies" instead of Computational Theology? In the German-speaking scholarship, this would likely result in further terminological confusion: Religious Studies refers to *Religionswissenschaft*, which as a sub-discipline within theology, is geared towards theological inter-religious competence (cf. Feldtkeller 2006, 123), or, as a discipline completely independent of theology, empirically researches religions and religious phenomena (cf. Moenikes 1997, 197).

4 Cf. Sutinen & Cooper (2021, 13): "Digital Theology is, fundamentally, an academic subject deeply rooted in practical applications." The book *Digital Theology: A Computer Science Perspective* gives a concise overview of the research field of Digital Theology. The definitions by Phillips et al. (2019), which Karcher has in mind in his critique of them being too oriented to practical theology, are evaluated in a contrasting manner by Sutinen & Cooper (2021, 16): "[T]hey do not fit comfortably. This is largely because the Phillips et al. definition is focussed on theory and conceptual argumentation; it does not easily cover the more practical aspects of Digital Theology which have emerged over recent years." Different academic cultures can thus be seen from the critiques themselves.

2. Using the German term “*Digitale Theologie*” would convey the European understanding of academic theology as understood by Karcher. So why is adding yet another term necessary? Apart from the lack of global connectivity the use of German implies, the problem is that *Digitale Theologie*, introduced as a term in the German-speaking world in 2015 by Johanna Haberer, a theologian with a primary focus on media studies, has already been very strongly influenced by the English-speaking discourse (cf. van Oorscot 2023, 14). The following (roughly sketched) diagram (Fig. 1) illustrates the diversity of the different areas of Digital Theology, each of which stands on its own, despite some eventual overlap (van Oorscot 2023 provides a detailed guide). The establishment of a Computational Theology should therefore also be seen as an important reform effort to be able to name theological research in the sense of type 1 of DH and thus also be identifiable for those outside the field.

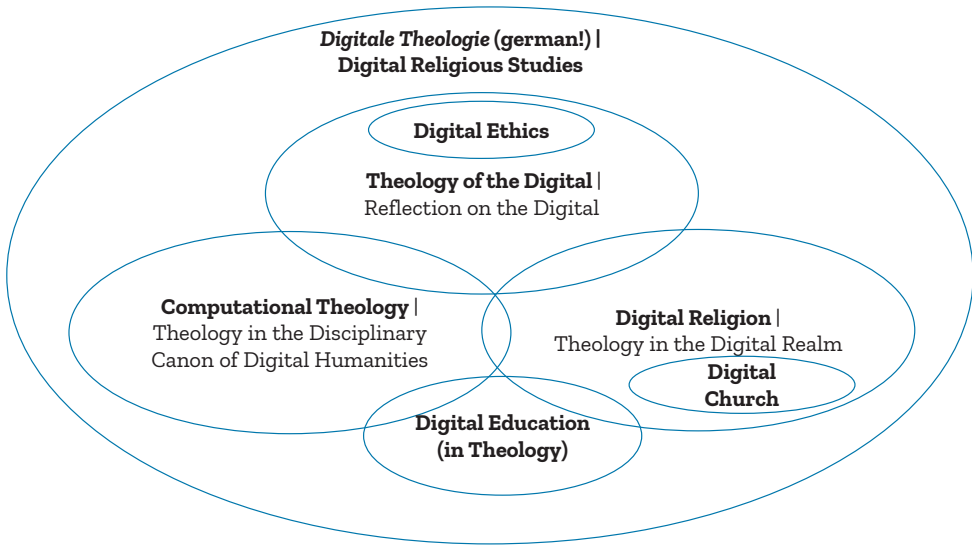


Fig. 1 Spherical Model of the different dimensions of Digital Theology

1.2 Cognitive Interests

Methodologically, Raffety makes a commendable contribution to Digital Theology. However, this version cannot be seen as Computational Theology, as it follows an understanding of DH according to type 2 and would presumably be categorized by Ramsay as “media and communications.” Raffety’s proposal is in line with the trend in Game Studies, where studies are focused on the “humanities of the digital,” i.e., a reflection on the digital, as Burghardt (2024, 1) indicates. Burghardt also includes

approaches to Game Studies that would correspond to a DH type 1 on p. 1f.⁵ Video game technology is by no means excluded as a subject of Computational Theology and could be an additional chapter of the compendium in the future *living handbook*.

Scholars of Computational Theology can have varied approaches to the connection between theological questions and IT practices. For example, one can ask whether established theological methods (e. g., in the field of historical critical exegesis)⁶ can be operationalized digitally. Conversely, established methods of the DH community could be examined to see whether they can be adapted for theological questions (the present volume could be an example of this). It would also be conceivable to develop new digital methods for theological questions, especially in an interdisciplinary work with scholars in the computer sciences.

2. Doing Computational Theology! Examples from Practice

After a lecture at the DHd2024 in Passau, during which I illustrated the lack of perception of theologians on the part of the DH community using Sahle's sphere model on the disciplines of DH (for this model, see p. 15 in the introduction to this volume), he sent me a modified version (Fig. 2), which now also includes theology. In fact, he already wrote in 2017 (11, n. 4):

The diagram is very oversimplified. The presented “subject areas” are not all-encompassing but are simply representative. Other disciplines could be added and positioned in a certain place, understood as sub-disciplines of individual disciplines, or even shown to be an intersection between major disciplines. In this respect, some might also locate biblical studies differently, as part of theology (which is not included here but could perhaps fall under the similar category as philosophy), as an area that integrates methods from different disciplines, or as a separate discipline. Positioning the subject areas also shows the variations in orientations to different objects: abstract concepts (philosophy), language (linguistics), texts (literary studies) or objects in their history (history), and visual (art history) or material (archeology) dimensions.

Sahle therefore also grants theological research a place in the DH's canon of research fields. However, the position of theology does not align with theology's high level of interdisciplinarity. A focus on abstract concepts is too narrow; theology is also similar

5 See also Ensslin (2021).

6 See e.g. Al-Suadi (2021, 66), who compares the methodological steps of historical critical exegesis with corresponding counterparts of digital historical critical exegesis.

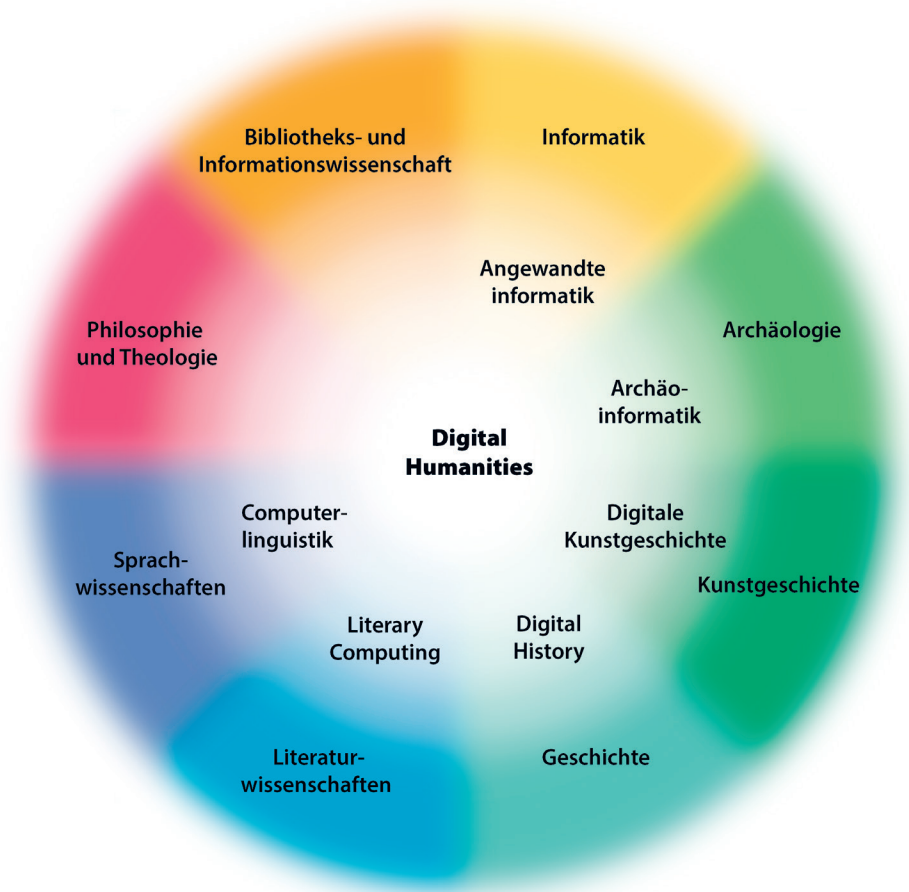


Fig. 2 Spheres of the Digital Humanities (modified)

to the other dimensions mentioned. Under this premise, however, there is no place within the diagram that would be appropriate. There would always be a deficiency somewhere. But apart from that, one might also ask whether it is appropriate for theology to be included in this context. To answer this question, we will now identify examples (!) of theological anthologies, special issues, and places of activity that can be assigned to Computational Theology (at least in part). While only a representative cross-section can be shown in this chapter, it is intended that the following information (along with the list of digital editions in the appendix of this article) will be supplemented or updated as part of the *living handbook*.

2.1 Anthologies and Special Issues Engaged with Computational Theology

Some emphasize (such as a few church historians) that DH research has been practiced in their own discipline for many decades. While the claim need not be disputed here, one must keep in mind that these practices often involve research in neighboring disciplines on topics related to religion. Anderson (2019, 76) claims:

Theologians have shown scant interest to this point in the tools for linking data, mapping, network analysis, text mining, and visualizing information that are fueling digital scholarship in other disciplines. My suspicion is that theological scholars may appreciate what their colleagues in other disciplines are doing but see them as irrelevant to theological inquiry.⁷

The citation from Clark & McBride Lindsey (2022, 16) must also be read in this light:

Tim Hutchings observed that “religion is at best a marginal theme in digital humanities conferences and debates” (Hutchings 2015, 283). In recent years the Association of Digital Humanities Organizations – the largest DH scholarly community – has hosted panels on religion and theology and the American Academy of Religion now facilitates a number of DH-themed panels and papers at its annual meetings.

To name another example: the religious topics at the DH2023 in Graz were mostly presented by philosophers and historians – with the exceptions of the religious studies scholar Martin Prell and the new testament scholar and theological library specialist Juan Garcés at the panel: *Transforming the Pietist Tradition: Disciplinary Innovation through Linked Digital Engagement* and my presentation of this compendium – (cf. the *Book of Abstracts* of this ADHO Conference in Baillot et al. [2023]). In the following one should note that the contributions to the field from the various research are ensured to be theologians or religious studies scholars.

2.1.1 Computational Theology in Biblical Exegesis (“Digital Biblical Studies”)

Most of the secondary literature even tangentially related to Computational Theology is likely found in biblical studies, especially in the area of the New Testament. Clivaz (2020, 98) provides a concise overview of the literature. One immediately notices that

⁷ Alternatively, theological research relies on the portals of neighboring disciplines with the risk that subject-specific potentials are not fully exploited, see Zahnd (2020, 115).

the contributions are mostly in the field of digital text criticism and editing.⁸ In the special issue *Digital Humanities in Biblical Studies and Theology* (*Open Theology* 5(1) 2019), which was also co-edited by Clivaz, eight of the eleven contributions are devoted to this topic. Further approaches, such as those on redaction criticism, can be found in Al-Suadi & Ulshöfer (2021), on network analysis in particular in Czachesz (2022, 9–26), the subsequent six articles in a special issue of the journal *Annali di Storia dell'Essegesi* entitled *Network Science in Biblical Studies*, and on computer-assisted stylometric methods for authenticating the Pauline letters by Jannidis in this volume.

Garcés & Heilmann (2017, 29–52) provide an excellent introduction to the intersection of DH and biblical exegesis. In addition to methods of textual criticism and digital editing, they also devote a subchapter to stylometry, co-occurrence analysis, and digital intertextuality in New Testament research.

Biblical archaeology is a particular case that connects biblical studies with the DH. Collinet (2021, 153–156) outlines the potentials and problems of digital methods in this field.

2.1.2 Computational Theology in Church History

From the perspective of church history, the practices of Computational Theology are particularly evident in the creation and use of full-text databases and digital editions (cf. the appendix by Annette von Stockhausen at the end of this chapter).⁹ This is due to the fact that their practice is only possible if suitable objects of investigation are available (cf. Heilmann 2022, 13f.). The digitization, processing, and preservation of theologically relevant sources and artifacts thus always remains one (!) of the central concerns of Computational Theology. In 2020, von Stockhausen published a special issue made up of four articles in the *Journal of Ancient Christianity* on the patristics (and the New Testament), in which various (differently understood) editing projects are presented on the one hand, and techniques, theories, and guidelines relating to editing are discussed on the other:

- M. Cassin: OÙ en est l'édition de textes patristiques grecs aujourd'hui? Théories, méthodes et pratiques (11–59)

8 Fischer (2019, 203–219) illustrates the enormous advantages a corresponding prepared text critical apparatus brings to a digital edition.

9 Digital prosopographies should also be mentioned, yet there were no (or at least hardly any) theologians involved in the development (at least in the digital stage). On the developmental history of the *Prosopography of the Byzantine World* (PBW) and *Prosopography of Anglo Saxon England* (PASE), see Ch. Roueché et al. (2023).

- H. Strutwolf: Die *Editio Critica Maior* des griechischen Neuen Testaments – Editionsprinzipien, Editionstechnik und Digital Humanities (60–108)
- J. Walters: The *Digital Syriac Corpus*: A Digital Repository for Syriac Texts (109–122)
- A. von Stockhausen: Die Modellierung kritischer Editionen im digitalen Zeitalter (123–160)

These essays are worth reading not only for exegetes and patristics scholars interested in digital editions of Greek or Syriac, but also for theologians who want to become acquainted with the creation of digital editions and get a glimpse into the specifics of theological corpora. With the help of von Stockhausen’s guidelines, theologically relevant works can be transcribed so they can be reused and connected, thus expanding the field of Computational Theology. According to Zahnd’s observations, an expansion is urgently needed. The Geneva Reformation historian points out that conventional ways are rarely abandoned in church history research “because the focus is too heavily on traditional methods of reading” (2020, 117). He continues:

This is regrettable because the digital medium would offer a wealth of possibilities for further forms of consultation – from digital style analyses and topic modeling to the automated evaluation of intertextual references – which would, however, require other, mechanically evaluable approaches to the editorial data.

The 2022 issue of the *Journal of Ethics in Antiquity and Christianity* on the topic of *Distant Reading – Perspectives of a Digital Age* provides several analyses in the patristic (and New Testament) field, which can be used to demonstrate the “rich possibilities of further forms of consultation:”

- J. Heilmann: Antike Ethik aus der Distanz. Computationelle Methoden zur Erforschung der Ethik im Neuen Testament und im antiken Christentum (12–30)
- Ch.A. Nunn: Das Thema patristischer Ethik – Versuch einer Annäherung durch Distanz am Beispiel der Briefe des Augustinus von Hippo (31–51)
- N. Nikki, V. Kaše & Z. Špiclová: The Cultural Evolution of Prototypical Paul in the First Five Centuries: A Distributional Semantic Analysis of Greek Christian Texts (52–76)
- B. Brunner: “wie Chrysostomus schreibt” – Kirchenväterzitate als normative Referenzen für den Umgang mit Trauer in frühneuzeitlichen Funeral-schriften (77–99)
- B. Totsche: Chancen und Grenzen der distant reading-Analyse antiker Texte mit Hilfe von MAXQDA (106–115)

The journal issue not only addresses the possibilities and examples of computer applications; it also deals with infrastructural problems and ideological reservations in this regard (see esp. *Digital Humanities – zwischen Rückschritt und Fortschritt. Ein Standpunkt*, Heil [2022, 103f.]; cf. also Heilmann [2022, 12–14]).¹⁰ Furthermore, anthologies dedicated to a specific topic and expound upon on practices that could be attributed to Computational Theology should also be mentioned, e.g., the use of network analyses for mapping late antique clerics in exile (Hillner 2016, 11–47).

The emphasis on patristic scholarship here might be partly due to my own affiliation with this field of study.¹¹ However, the focus on ancient history is well-founded, since in the beginnings of computer use in the humanities, from around the 1960s onwards, “text corpora [...] from (English) literature and antiquity [...] were digitized and prepared for machine processing” (Haber 2011, 12) and, as a result, “ancient history [...] has had access to an almost completely digitized corpus of sources for several years now, which in turn has changed the planning and implementation of research projects” (ibid., 152).¹² However, as the Latinist Revellio (2022, 77–79) claims, there are also problems with the reliability and accessibility of digital text corpora (cf. the chapter from C. T. Schroeder in this volume, esp. pp. 384–386).

2.1.3 Computational Theology in Systematic Theology

One of the contributions to the special volume in *Open Theology* 5(1) is dedicated to systematic theology. Robinson (2019, 67) gives a hesitant credence to the relationship between DH and ST:

It remains the case that systematic theology has found little use for digital humanities in its teaching and research beyond the use of e-learning platforms and electronic library resources common to many humanities disciplines.

Robinson sees relatively few possibilities for the productive use of DH in ST. In the context of the 2021 annual conference of the *Global Network for Digital Theology*, whose contributions were recorded in the journal *Cursor_* (and could almost all be assigned to type 2 of the DH), Wormstädt offers a critique of Robinson’s contribution, emphasizing the potential for integrating DH into systematic theology. He thus identifies five “basis operations” of systematic theology (8):

10 Volp (2020, 439–460) provides a comprehensive overview of the relationship between DH and patristics.

11 Pietism research should also be mentioned. For an overview of the DH in this field, see Faull (2021, 14–18).

12 Revellio (2022, 69–74) treats the question of why ancient studies have such an affinity for digital methods.

1. the analysis of faith statements
2. the analysis of theologically relevant texts
3. the applications of theological insights to non-theological problems
4. the writing of texts
5. the construction of a consistent theological system

Wormstädt thinks there is potential in approach 2 and provides examples in support for this approach (9):

For example, it might be quite useful to know, whether a systematic theologian is inspired by prior texts which they do not mention [cf. the chapter from J. Nantke on intertextuality research in this volume]. In keeping of distant reading approaches, analyses of an author's oeuvre with regard to typical theological phrases or already identified ones, which proved to be typical for them, could reveal patterns, theoretical/dogmatical emphases, or changes over time within these [cf. the chapter by E. Gius on NER in this volume]. Both might further strengthen hermeneutical findings stemming from close reading research or revealing new leads. Given a well performed hermeneutical research basis, and ever more digitally accessible bodies of text, one might even want to compare bigger corpora, looking for example for trends in German systematic theology compared to those in Scandinavia, US-America, or Nigeria [cf. the chapter by A. Lasch on discourse analysis in this volume].

Wormstädt (2021, 10) also identifies potential for approach 4 and refers to the use of AI-generated texts as an interpretive aid and a challenge to systematic theology ("DeepBarth"; cf. the chapter by J. Gröpler, M. Mundorf, and N. Wilder on AI supported text production in higher education in this volume). However, these approaches are just suggestions without a concrete basis. Wormstädt does not contradict Robinson's observation that ST has very few current points of contact with DH. One can see this by the title of his article: *Relationship status: 'It's complicated.'* *Digital Humanities Methods and Systematic Theology*.

In another sense, however, points of contact can already be seen. In the DH, efforts to provide a theoretical foundation for research practices have been growing in recent years (cf. Kleymann 2023, 8f.). Systematic theologians can make important contributions to this discourse. Van Oorschot (2021, 143–164) should be mentioned with her contribution on the topic of *Neue Technik – neue Wissenschaft? Wissenschaftstheoretische und -ethische Herausforderungen der Digital Humanities*. Moreover, it is crucial to conduct monitoring of DH practices, particularly with respect to AI research (cf. Dobson (2019) 29: "The digital humanities need the hermeneutics of suspicion, especially as it applies to methodological choices and interpretations."). Theological ethicists can play an important role here, especially in collaboration with computer

scientists. Geldhauser & Diebel-Fischer (2024, 1–6), for example, investigate whether the concepts of fairness and diversity can be implemented mathematically and taught to AI, which proves to be highly problematic.¹³

2.1.4 Computational Theology in Religious Studies

Anyone wanting to learn more about the practices of Computational Theology in Religious Studies is encouraged to consult the six-volume comprehensive treatment found in *Introductions to Digital Humanities – Religion*:

- Vol. 1: D. Veidlinger (Eds.), *Digital Humanities and Buddhism* (2019)
- Vol. 2: Ch.D. Cantwell & K. Petersen (Eds.), *Digital Humanities and Research Methods in Religious Studies* (2021)
- Vol. 3: C. van Lit & J.J. Morris (Eds.), *Digital Humanities and Religions in Asia* (2024)
- Vol. 4: T. Hutchings & C. Clivaz (Eds.), *Digital Humanities and Christianity* (2021)
- Vol. 5: C.B. Anderson (Eds.), *Digital Humanities and Libraries and Archives in Religious Studies* (2022)
- Vol. 6: E.S. Clark & R. McBride Lindsey (Eds.), *Digital Humanities and Material Religion* (2022)

Volume two contains several projects and studies that focus on DH and religiously related subjects. Koch (2020, 152–158) gives a concise overview of the field.

2.1.5 Computational Theology in Practical Theology

Karcher (2020, 132–142) claims there is a tendency in practical theology to do a “theology of the digital” instead of a “theology with the digital.” The compendium *Theologie und Digitalität* (Beck et al. 2021), where they map out the entire field of practical theological reflection on the digital is a paradigmatic example of this interpretation.

Nevertheless, a “theology with the digital” can also be found in practical theology, as Karcher (2020, 138–141) provides evidence of this phenomenon based on only three studies. Consequently, his conclusion remains cautious:

13 Cf. also Görder & Zeyher-Quattlender (2019) on the use of data in business, social welfare, and the church from an ethical perspective. See also Puzio, Kunkel & Klinge (2023) on theological approaches to technology and AI.

Whether practical theology will prove to be a part of DH or a theology of the digital will be decided in the future. Whether the two will continue to develop alongside each other or even overlap also remains to be seen because, thus far, theological projects have hardly been represented in the German-speaking DH community, continue to concentrate on databases and digital editions, or simply exist in a niche with linguistics, communication, history, or religious studies.

Even still, little has changed in Karcher's predictions about the fields. The CONTOC study, for example, which examined the online activities of churches in times of Covid, does not contain any computer text analyses, despite the appropriateness of methods like topic modeling for digital discourse analysis (on the design of the study, see Beck et al. [2023, 25–31]). However, other recent volumes contain at least traces of Computational Theology, which could be further developed. For example, Wünsche et al. (2023, 244–246) use the open access network analysis tool *Gephi* in the volume *Religion auf Instagram* to visualize the linking of around forty central topics with which Muslim Instagram influencers are concerned.¹⁴ In the same volume, Novak et al. (2023, 270–274) present the *YouBeOn Map*,¹⁵ which was created in collaboration with the *Austrian Centre for Digital Humanities* and maps the online and offline environments of religious young people from the greater Vienna area. To broaden the scope of practical theology, digital pastoral care should also be addressed, even if an anthology does not yet exist. Blackstein (2023, 172–183) discusses the use of AI in pastoral care, names specific tools and encourages religious scholars not to reject them outright as dangerous, but to use them creatively in the future as an accompanying (!) instrument “to reach people who may have difficulties seeking out traditional pastoral care services” (181).

2.1.6 Computational Theology and Theological Education

Garcés & Heilmann (2017, 47–49) recommend teaching minimum IT standards in the curriculum to be able to engage productively with digital methods and use them for exegetical research. Three further contributions in the same volume provide examples of how digital teaching can be successfully integrated into (here, biblical exegesis) theological studies and the added value that this approach brings compared to purely analog practices:

14 On the use of social network analysis to analyze religious groups, see Campbell & Sheldon (2022) 75f.; cf. also Roleder (2020).

15 Cf. <https://app.youbeon.eu> (Accessed: 13 June 2024).

- K. Künzl & F. Wegschneider: Faszination Digital Humanities. Was benötigen Studierende in ihrer bibelwissenschaftlichen Ausbildung? (53–67)
- T. Flemming: Lernen an Handschriften. Studierende als Experten gewinnen (69–79)
- M. Munson: Natural Language Processing (NLP) unterrichten. Ein Bericht aus der akademischen Praxis (87–92)

In 2020, Giercke-Ungermann and Handschuh published the collected volume *Digitale Lehre in der Theologie. Chancen, Risiken und Nebenwirkungen*. However, concrete DH practices are not mentioned. The focus of the volume is on media didactics (e.g., the role of the teacher in digital settings) and ethical considerations relating to virtual teaching. Schöning (2020, 123) explicitly devotes a paragraph to the use of DH, where he warns against using certain methods as an end in themselves, which may restrict students in their working methods, proving rather to be an obstacle to learning:¹⁶

This is particularly true in the field of Digital Humanities. If this term is used to describe the processing of questions in the humanities using digital methods, methodological skills can be developed that follow the rules of the tools. However, only when the techniques are applied in a poetic and playful way that extends the rules can they also be approached in a reflexive and analytical-critical manner always “considering their epistemological imbalances and inherent dynamics” and thus achieve higher taxonomy levels of learning. Such a creative expansion of existing actions takes learners seriously as subjects by challenging them at a high level to do something that cannot be achieved through digitalization (cf. also Schöning 2021, 59).

Programming skills would thus have to be taught in educational fields, which does not seem realistic (cf. Garcés & Heilmann 2017, 46: “Basic computer science training cannot be provided as part of the curriculum in biblical studies [and all other theological subjects]”). The functional scope of program curricula is limited; however, learning digital skills and tools offers simple solutions to introduce students to working with digital methods so that they can get an idea of what kind of research could

16 The danger that computer environments restrict research questions is referred to within DH as “surface theory” or “interface theory” and goes back to Johanna Drucker. See Drucker (2011, 9). Cf. also Berry & Fagerjord (2017, 127): “The surface, or interactional layer, of the digital is hugely important for providing the foundations through which we interact with these technologies. Not only are the interfaces responsive to our questioning via queries, searches, navigation and so forth, they are also designed, increasingly, to be both intuitive, intelligent and contextual, and aesthetic, stylish and pleasant. Modern interfaces often attempt not only to guess our intentions but also to invite extended use and shape the direction of our minds’ travel.”

be performed with them.¹⁷ Therefore, in my opinion Risam & Gil's (2022, 9) *Minimal Computing* approach is most apt for teaching and education:

By giving up what might ultimately be prettier or more elegant, in the context of teaching, she instead focused on technologies that help students gain confidence in their digital literacy skills and have small wins that might later encourage them to develop a stronger technical skill set.

Problem solving strategies are practiced in this sense. These strategies are in accordance with what Harrich & Hiepel (2021, 91) call "Computational Thinking" referring to a concept of Jeanette M. Wing:

The concept of *Computational Thinking* encourages theology to work in this direction. Digital tools in all fields that can be easily used, e.g., when it comes to the processing of raw data, allow research problems to be solved more efficiently that would have been almost impossible to solve without such tools, or would only have been possible with a large consumption of resources.

The essay is in the edited volume by Burke, Hiepel, Niggemeier, and Zimmermann on *Theologiestudium im digitalen Zeitalter*, which offers more possibilities for Computational Theology. For example, Hiepel & Niggemeier (2021, 201–214) discuss how the potential of digital tools could be used in all biblical disciplines. Brockmann et al. (2021, 215–231) show how such tools could contribute analogically to the field of church history. Lüsttraeten (2021, 303–317) offers an overview of digitization in liturgical studies.

The 2023 handout *Digitalisierung der Fachbereiche. Theologie und verwandte Disziplinen* describes the current *state of the art*. The authors rightly claim (22):

17 This should not be misunderstood as a plea to use a *black box*. The programs – whether in research or teaching – should contain technical documentation and be openly accessible. Cf. Pirker (2021, 194): "The software and hardware platforms with their specific economic interests in a competitive education market are independent actors with divergent, often not publicly visible interests that are not limited to profit maximization. The networks that enter a relationship and have diverging interests are generally not visible to users as actors. Data-based applications generate both observation possibilities and data links to an extent that has not yet been reflected upon in the world of education. If one reflects on this responsibly in terms of religious education, this means that the selection of tools and didactic paths must be accompanied by a fundamental orientation towards open educational resources – open access and open source, platform-independent offers that are created in open communicating networks, strict conformity with EU data protection directives, consideration of inclusion and diversity – to name just a few criteria." See also the article on research data management by J. Apel in this volume (p. 396).

The aim of digitalization should be a new culture of teaching and learning, research, and work for all university members, rather than an improvised electrification of the old or mere technical equipment for its own sake. In every respect, this is also a question of openness to the issue of successful teaching in the present and future.

However, the focus is not on specific methods or practices, but on progressive didactic scenarios such as the *flipped classroom* format. The field of Computational Theology is certainly part of this progress, yet also presenting a challenge given the technical skills required (21):

The general trend towards dependency on third-party funding can also be seen in theology. The funding includes the relation of research fields with a specific application to the present being more likely to receive funding than historically focused fields. Although source research, text research, archaeology, editions, or historical research within theology can also have low potential for third-party funding in digital-related research practices. One problem obviously lies in the fact that the historical theological disciplines would have to develop their own skills to contribute to this field.

The *Compendium* contributes to this set of problems in several ways. On the one hand, the volume can help build appropriate skills, and on the other hand, the contributions make it clear that subjects with contemporary relevance sometimes face even greater problems (e.g., regarding licenses) and that theological researchers beyond the historical subjects could also make such skills fruitful in their field.

2.2 Current German-speaking Locations for Computational Theology

The following (not exhaustive, for more information see the future *living handbook*) presents current projects located at various places in the German-speaking field of Computational Theology. The creation of digital editions (or databases), which exist almost everywhere, is not considered here;¹⁸ instead, cf. the Appendix.

18 For example, Mainz is not specifically mentioned, although the *Institute of European History* (IEG) is home to an entire center for the creation and processing of theologically relevant digital editions. The in-house DH Lab, which provides a digital research infrastructure, is of great advantage here. See <https://www.ieg-mainz.de/forschung/dh-lab> (Accessed: 15 June 2024). The IEG is the home of some church historians of Reformation history and the early modern period who belong to the DH in some way and can thus also be assigned to Computational Theology. Some include Irene Dingel, Christopher Voigt-Goy, Benedikt Brunner, and Markus Müller (now working on a digital intertextuality project on the Mainz preacher Johann Wild at the University of Wuppertal).

2.2.1 WGTh [Bonn and Göttingen]

The *Wissenschaftliche Gesellschaft für Theologie e. V.* (WGTh) has recently developed forms of Computational Theology, as can be seen from the three-year funding of a new project group, which was applied for by the church historians Aneke Dornbusch (Bonn), Claudia Kampmann (Bonn), and Dorothee Schenk (Göttingen). This project group will focus on network research in church history and theology by exploring the diverse applications of social network analysis through two documented conferences and at least two workshops.¹⁹

2.2.2 Bochum

Religious studies scholars interested in Computational Theology will find a lot of opportunity for digital research in Bochum. The interdisciplinary Center for Religious Studies (CERES) has its own DH department (DH@CERES) with numerous projects and events that combine DH and religious studies research.²⁰ The digital research infrastructure of the CRC *Metaphors of Religion* deserves special mention. With the *Akita* annotation tool, for example, a common methodological basis is being developed for all sub-projects to enable “comparative research across languages and religious traditions.” The DH@CERES is coordinated by Frederik Elwert, thanks to whom religious research can already be found in publications devoted to the DH (cf. Elwert 2021, 172–186). CERES will soon be supported by a junior professorship for Digital Humanities in Religious Studies.

Not only religious, but also homiletics scholars can find interesting crossover with Computational Theology in Bochum. In the BMBF project RUNIP (*Recht und Normen in Predigten. Maschinell unterstützte Analyse von Predigtkorpora im Zeitvergleich*) under the direction of Markus Totzeck, the historical sermon corpus of Friedrich Schleiermacher and contemporary Protestant sermons are being examined by machine to determine how and to what extent normative arguments are made.²¹

19 For a description of the project, see <https://www.wgth.de/images/2024/Projektgruppe%20Netzwerke.pdf> (Accessed: 15 June 2024).

20 Cf. <https://dh.ceres.rub.de> (Accessed: 15 June 2024).

21 For a description of the project, see <https://runip-projekt.ruhr-uni-bochum.de/index.html> (Accessed: 15 June 2024).

2.2.3 Darmstadt, Rostock, and Wismar

The Darmstadt systematic theologian Gotlind Ulshöfer, the Rostock New Testament scholar Soham Al-Suadi, and the Wismar computer scientist Frank Krüger are leading a joint DFG project entitled *GenderVarianten_Revisionen von Genderkonstruktionen in Textüberlieferungen*. In this project, the manuscript tradition of the New Testament is being examined using machine processing for different understandings of gender. The project thus productively combines textual criticism and gender studies while using DH.²²

Rostock could also make an important contribution to the integration of Computational Theology into theological education. As part of the *DiCaRo* project, Soham Al-Suadi and communications engineer Tobias Weber are leading a sub-project to develop an interdisciplinary and inter-faculty module aimed at promoting data literacy. The theology department is the pilot.²³

2.2.4 Munich

Since the company *OpenAI* presented a publicly accessible and freely usable Large Language Model (LLM) in November 2022, AI technologies have increasingly permeated everyday life (see the chapter by Gröpler, Mundorf, and Wilder on AI-supported text production in higher education in this volume). New Testament scholar Christoph Heilig is researching how this movement affects theology.²⁴ Heilig is the lead investigator in a research group at LMU Munich that is looking at the potential of LLMs in narratological research perspectives on biblical texts.²⁵

As part of the DFG project *Zeitgeist und Christentum. Die Zeitschrift Christliche Welt als Medium des Kulturprotestantismus*, systematic theologian Marieluise Sonnemeyer is analyzing the concept of crisis in her doctoral project. She uses a wide range of methods of digital discourse analysis for this purpose.

22 See the project page, <https://gepris.dfg.de/gepris/projekt/513300936> (Accessed: 15 June 2024).

23 See the project page, <https://www.dicaro.uni-rostock.de/teilprojekte/diss-data-literacy> (Accessed: 15 June 2024).

24 New Testament scholar Nicole Oesterreich from the University of Leipzig also names the influence of AI on the development of biblical studies as a research focus. Oesterreich is head of the *Corpus Judaico-Hellenisticum Novi Testamenti* digital project at the Saxon Academy of Sciences, which was launched in January 2024. Cf. <https://www.theol.uni-leipzig.de/institut-fuer-neutestamentliche-wissenschaft/forschung/corpus-judaico-hellenisticum-novi-testamenti-digital> (Accessed: 15 June 2024).

25 Cf. <https://www.early-christian-narratives.com/post/ai-diversity-and-marginalized-perspective> (Accessed: 15 June 2024).

2.2.5 Passau

Under the title *Digital Methods in Theology*, Christian Handschuh (Church History), Bernhard Bleyer, and Stefanie Müller (Theological Ethics) are cooperating with Annette Hautli-Janisz (Computational Rhetoric and Natural Language Processing). The focus of this cooperation is diachronic argument mining, i. e., the analysis of the temporal change of argumentation patterns in certain (theological) discourses. The initial project focuses on *Die katholische Diskussion um den Suizid zwischen 1800 und der Gegenwart*. Through this project, the potential of digital discourse analysis for theological research in the field of historical and systematic theology is evident.²⁶

2.2.6 Zurich

The university research focus “Digital Religion(s)” under the direction of the practical theologian Thomas Schlag is particularly relevant here. The aim of this UFSP is to analyze religious players in the digital space. All areas of Digital Theology are considered in the interdisciplinary projects. Computational Theology practices also have an influence, especially in projects involving cooperation with computational linguistics. For example, computational methods are used to investigate religious mourning communication on Twitter (see N. Bodenmann 2023), or to examine argument structures on religious issues in the digital space between respect and intolerance.²⁷

2.2.7 Heidelberg

The TheoLab, based in Heidelberg, is a research network at the interface of theology and DH, which forms the infrastructural framework for the creation of this compendium. In addition, various events have been offered since 2019 to promote research in the field of Computational Theology and networking between members of theology and DH. So far, these efforts have included early career research colloquia, workshop reports, and conferences. Further formats are in the planning phase.²⁸

26 See the project page, <https://www.ktf.uni-passau.de/digital-methods> (Accessed: 15 June 2024).

27 See the project page, https://www.digitalreligions.uzh.ch/de/research/externaldynamics/p8_argument_mining_detection_of_extremism_intolerance.html (Accessed: 15 June 2024).

28 For the TheoLab blog, see <https://theolab.hypotheses.org> (Accessed: 15 June 2024).

2.3 Summary – Theology in the Canon of the Digital Humanities

The above analysis of the field shows that although there are disciplinary and local differences in the extent to which Computational Theology is practiced, activities in this area are continuing to increase. With the *Compendium Computational Theology*, the editors hope that these activities will be expanded and that the place of theology in Sahle's diagram can be self-evident.

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Figure Credits

Fig. 1: Spherical Model of the different dimensions of Digital Theology – created by the author.

Fig. 2: Spheres of the Digital Humanities, Version 4 – created by Patrick Sahle, CC BY 4.0

Appendix. Digital Editions in the Field of Theology

Annette von Stockhausen

Two catalogs of digital editions provide an interdisciplinary overview and also contain digital editions from the field of theology:

A Catalog of Digital Scholarly Editions, curated by P. Sahle. URL: <https://www.digitale-edition.de/exist/apps/editions-browser/index.html> (Accessed: 15 June 2024).

Catalogue Digital Editions, curated by G. Franzini, technically supported by P. Andorfer & K. Zaytseva. URL: <https://dig-ed-cat.acdh.oeaw.ac.at> (Accessed: 15 June 2024).

However, since neither catalog is complete, I will list a few examples here that show the very diverse or rather disparate status quo of digital editing in the field of theology:

Codex Sinaiticus. URL: <https://www.codexsinaiticus.org> (Accessed: 15 June 2024).
[Review: Schnöpf, M. (2014). *Codex Sinaiticus*, *RIDE*, 1, 1–28. DOI: <https://doi.org/10.18716/ride.a.1.2> (Accessed: 15 June 2024)].

Scripta Qumranica Electronica. URL: <https://sqe.deadseascrolls.org.il> (Accessed: 15 June 2024).

Editio Critica Maior des Neuen Testamentes. URL: <https://ntg.uni-muenster.de> (Accessed: 15 June 2024).

Mark16. URL: <https://mark16.sib.swiss> (Accessed: 15 June 2024).

[Cf. Clivaz, C., Monier, M., & Barda, J. (2021). *MARK16 as Virtual Research Environment. Challenges and Opportunities in New Testament Studies*. In C. Clivaz & G.V. Allen (Eds.), *Ancient Manuscripts and Virtual Research Environments* (no pag.) [= *Special Issue. Classics@Journal*, 18]. URL: <https://classics-at.chs.harvard.edu/classics18-clivaz-monier-barda> (Accessed: 15 June 2024)].

Patristisches Textarchiv. URL: <https://pta.bbaw.de> (Accessed: 15 June 2024).

The Saint Patrick's Confessio Hypertext Stack Project. URL: <https://www.confessio.ie> (Accessed: 15 June 2024).

[Review: Brandenburg, Y. (2020). A Review of Confessio.Ie, or Practical Thoughts on Digital Editing in Classics, *RIDE*, 13, 1–51. DOI: <https://doi.org/10.18716/ride.a.13.5> (Accessed: 15 June 2024)].

Scholastic Commentaries and Texts Archive. URL: <https://scta.info> (Accessed: 15 June 2024).

Corpus Thomisticum. URL: <https://www.corpusthomisticum.org> (Accessed: 15 June 2024).

- Hildegardis Bingensis. Liber epistolarum.* URL: <https://liberepistolarum.mni.thm.de> (Accessed: 15 June 2024).
[Cf. Kuczera, A. (2020). TEI Beyond XML – Digital Scholarly Editions as Provenance Knowledge Graphs. In T. Andrews, F. Diehr, T. Efer, A. Kuczera, & J. van Zundert (Eds.), *Graph Technologies in the Humanities. Proceedings 2020* (pp. 101–123). Wien: GRAPH 2020. URL: <https://ceur-ws.org/Vol-3110/paper6.pdf> (Accessed: 15 June 2024)].
- Guillelmus Autissiodorensis, Summa de officiis ecclesiasticis.* URL: https://guillelmus.uni-koeln.de/tcrit/tcrit_prologus (Accessed: 15 June 2024).
- Der Österreichische Bibelübersetzer.* URL: <https://bibeluebersetzer-digital.de> (Accessed: 15 June 2024).
- Wenzelsbibel Digital.* URL: <https://edition.onb.ac.at/wenzelsbibel> (Accessed: 15 June 2024).
- Bullinger Digital.* URL: <https://www.bullinger-digital.ch> (Accessed: 15 June 2024).
[Cf. Ströbel, P.B., Fischer, L., Müller, R., Scheurer, P., Schroffenegger, B., Suter, B., & Volk, M. (2024). Multilingual Workflows in Bullinger Digital. Data Curation for Latin and Early New High German, *Journal of Open Humanities Data*, 10(1), 1–13. DOI: <https://doi.org/10.5334/johd.174> (Accessed: 15 June 2024)].
- Ein Sermon von Ablass und Gnade. a digital edition.* URL: <https://editions.mml.ox.ac.uk/editions/ablassgnade6> (Accessed: 15 June 2024).
- Kritische Gesamtausgabe der Schriften und Briefe Andreas Bodensteins von Karlstadt.* URL: <http://dev2.hab.de/apps/edoc/start.html?id=ed000216> (Accessed: 15 June 2024).
- Briefe und Akten zur Kirchenpolitik Friedrichs des Weisen und Johannis des Beständigen 1513 bis 1532.* URL: <https://bakfj.saw-leipzig.de> (Accessed: 15 June 2024).
- Europäische Religionsfrieden Digital.* URL: <https://tueditions.ulb.tu-darmstadt.de/v/pa000008-0000> (Accessed: 15 June 2024).
- Controversia et confessio.* URL: <https://www.controversia-et-confessio.de> (Accessed: 15 June 2024).
- Theologenbriefwechsel im Südwesten des Reichs in der Frühen Neuzeit (1550–1620).* URL: <https://thbw.hadw-bw.de> (Accessed: 15 June 2024).
- Bibliothek der Neologie.* URL: <https://bdn-edition.de/index.html> (Accessed: 15 June 2024).
- schleiermacher digital. Briefwechsel, Tageskalender, Vorlesungen von Friedrich Schleiermacher.* URL: <https://schleiermacher-digital.de> (Accessed: 15 June 2024).
- Die sozinianischen Briefwechsel.* URL: <https://sozinianer.mni.thm.de> (Accessed: 15 June 2024).
- Kritische Online-Edition der Nuntiaturberichte Eugenio Pacellis (1917–1929).* URL: <https://www.pacelli-edition.de> (Accessed: 15 June 2024).