

Review Article

New Approaches in Digital Biblical Studies

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Abstract

Digital approaches to biblical studies have increased in number and significance over the last 20 years. In order to gauge the large spectrum of methodologies, research questions, and research objects, this essay showcases a range of projects that have been included in two volumes of the series *Digital Biblical Studies*. Using them as a stepping stone, the introductory and concluding remarks seek to map digital biblical studies within the broader field of biblical studies, to reveal common trends, and to offer suggestions for the future interaction of Digital Humanities and biblical studies.

Keywords

Digital Humanities – methodology – biblical studies – Classical studies – editing – textual analysis – visual analysis – research environment – database

Sara Schulthess, Garrick V. Allen, Paul Dilley, and Peter M. Phillips, eds., *New Approaches to Textual and Image Analysis in Early Jewish and Christian Studies*, Digital Biblical Studies 5 (Leiden: Brill, 2022) vi + 193 pp., ISBN: 978-90-04-51813-1, €129,00. |

Vanessa Bigot Juloux, Alessandro Di Ludovico, and Sveta Matskevich, eds., *The Ancient World Goes Digital: Case Studies on Archaeology, Texts, Online Publishing, Digital Archiving, and Preservation*, Digital Biblical Studies 6 (Leiden: Brill, 2023) xlvii + 525 pp., ISBN: 978-90-04-51766-0, €173,00.

1 Introduction*

The development of new methodologies and approaches to biblical studies is a constant in research. Some of them have come and gone, some have stayed and evolved. Digital approaches to biblical studies are certainly of the latter kind. Now, in the mid 2020s, hardly anyone would need convincing that technology has enhanced research significantly. However, there is a yawning gap between this broad consensus and the knowledge about (and use of) digital methods in biblical studies. The Brill series *Digital Biblical Studies* under the Editor-in-Chief Ken Penner (St. Francis Xavier University, Nova Scotia, Canada) bridges this gap, as it “aims to publish the latest research at the intersection of Digital Humanities and Biblical Studies, Ancient Judaism, and Early Christianity in order to demonstrate the transformation of research, teaching, cognition, and the economy of knowledge in digital culture.”¹ Since its first volume in 2016, it has brought forth seven volumes, two of which are monographs and five are edited volumes. The series in and of itself is a welcome novelty, as publications on the application of Digital Humanities (DH) to biblical studies have no other designated forum. Studies are either included in theology journals (e.g., *Open Theology*), DH journals (e.g., *Digital Classics Online*), journals in Computer Science or Information Science (e.g., *International Journal of Information Science and Technology*), as essays in topical volumes (e.g., on textual criticism), or, frequently, through freely accessible websites (see Satlow, vol. 5, pp. 42–43). While the DH community is closely interconnected, e.g., by conferences in the field, there are also research units at the annual meetings of the Society

* I thank the editors of *Novum Testamentum*, Cilliers Breytenbach, Christine Gerber, and Janet Spittler, for asking me to publish my thoughts on the two volumes as a review article, thus allowing me to develop my ideas further and offer my considerations on the value of digital methods in biblical studies to the scholarly community.

¹ Cf. www.brill.com/display/serial/DBS, viewed on 01.09.2025.

of Biblical Literature or the European Association of Biblical Studies. Thus, the series unites reflections that would often be more spread out.

In reviewing the two consecutive volumes 5 and 6 in more detail,² I intend to introduce readers to some exciting current and completed projects as well as considerations from the fields of digital biblical studies. This review article is neither a comprehensive introduction to DH or its applicability to biblical studies (as it is too big of a field to properly define in such brevity),³ nor is it a systematic review of all literature on DH research and biblical studies.

The articles in the two volumes contain methodological considerations as well as studies on textual approaches, visual analysis, and the digital research environment. These will be the focus of this essay.

2 Methodological Considerations

The field of digital biblical studies is versatile, not only with regard to its possible scenarios of application, its methodologies, or the technologies used. It therefore encompasses its own “jargon,” of which some terms and concepts are common among all researchers and some more applicable to a few. As a result, defining and outlining one’s methodology and terminology is a frequent trope in publications.

A great starting point for considering digital biblical studies is the essay by Michael L. Satlow (Professor of Religious Studies and Judaic

² The latest publication by P. Robertson (ed.), *Statistical Approaches to Paul's Letters: Distributions, Visualization, Cluster Mapping, and Topology* (2025) was too recent to take into account here. The following essays in vol. 6 pertain to archaeology and will therefore not be included in the discussion: A. Städtler, “Evaluating Ancient Arabia’s Trade Routes with Least-Cost-Path Analysis,” 21–45; M. Polig, S. Hermon, S. Jusseret, G. Sorrentino, J. Driessen, A. Kanta, and J. Bretschneider, “High-Resolution 3D Documentation of Archaeological Artefacts: A Copper-Alloy Object from Pyla-Kokkinokremos (Cyprus) as a Case-Study,” 46–71; H. Hameeuw, A. Van der Perre, and V. Boschloos, “Interactive 2D and Multispectral Imaging on the Crossroads of Archaeology, Egyptology and Assyriology,” 72–111; E. Roßberger and A. Kurmangaliev, “Integrating Data, Creating Knowledge from Ancient West Asian Seals and Sealings: The DigANES/ACAWAI-CS Projects,” 112–136; and M.C. Prosser, “Integrating Spatial Data in the Ras Shamra Tablet Inventory,” 371–385.

³ For that, see the other volumes in the series as well as C. Clivaz, A. Gregory and D. Hamidović, eds., *Digital Humanities in Biblical, Early Jewish and Early Christian Studies* (Scholarly Communication 2; Leiden: Brill, 2013).

Studies at Brown University), “The Promise and Challenges of Digital Humanities for the Study of Jews and Judaism in Antiquity” (vol. 5, pp. 26–43), as it broadly discusses the potential of research in DH as well as its challenges. Both are applied to previous and current projects studying ancient Judaism. In this way, it provides a vivid illustration of the large field of digital biblical studies. Satlow groups DH | projects into four categories (“communicative, educational, data collection, analytical,” p. 26), of which biblical studies make use of the first three (p. 27). He underlines just how important the collection and curation of digital data is in order to do effective research in the field. Thus, he offers a well-informed overview of the FAIR guidelines (findability, accessibility, interoperability, reusability, pp. 27–34) that are so essential to DH research, as they allow for effective interdisciplinary exchange and long-term usability of resources and results. Accordingly, all data should be accessible, meaning open and free to access and not proprietary (the TLG is a negative example of this). Findability is achieved by persistent identifiers (e.g., supplying a DOI number), enriching the data with descriptive metadata (e.g., for a journal article, the metadata would encompass all information required for proper citation and more), and inclusion in searchable tools (as IxTheo is a powerful resource for all literature in the field of theology). For data to be truly reusable, licenses (such as those of the Creative Commons organization) need to be used and clearly defined. Finally, just as audio cassettes or compact discs have gone out of fashion, so also we need to prevent data from becoming useless over time. This requires common standards, such as for encoding or vocabularies.

Projects in digital biblical studies often do not reach their full potential, because funding ends and projects remain orphaned. Unless someone takes responsibility for continuing someone else’s project (as was the case with *Inscriptiones Christianae Graecae* which moved from Berlin to Kiel (<https://icg.uni-kiel.de>) with the end of the Excellence Cluster Topoi), the results are contained in publications and websites, but do not go much further. Therefore, scholars must heed Satlow’s closing appeal to recognize the value of creating good data, because this will improve chances of funding such projects and other forms of recognition (pp. 40–41). By doing so, Satlow also hits the nerve of a major challenge to research in DH: the scholarly community actively opening up to and engaging with new technologies.

The true value of the article “Digitality and the Ebla Archives:

Framing Online Research Tools for the Study of Early Cuneiform Texts in a Broader Methodological Discourse” (vol. 6, pp. 316–334) by Massimo Maiocchi (Researcher at Ca’ Foscari University of Venice) and Lucio Milano (Professor for the History of the Ancient Near East at Ca’ Foscari University of Venice) is their reflection on digitization, which they understand broadly as adapting digital approaches to research (instead of the common understanding regarding archives, namely taking digital photos of objects), and digitality. With the rise of DH, they claim: “what is needed is education in terms of digitality: what is possible to achieve, how is it possible to achieve it, and, most of all, how to do digitization, [...] as well as foreseeing how the newly digitized data may | be exploited to answer not only questions immediately relevant to the project generating them, but any sort of questions a digital humanist may ask” (p. 329). Besides these general considerations, the article describes the Ebla Digital Archives project and therefore falls in line with the databases in section 3 of the textual approaches.

More introductions to common terms, abbreviations, and tools in the field of DH studies, e.g., “Semantic Web,” “Linked (Open) Data,” RDF, HTTP, URI, or “ontology” are provided by Terhi Nurmikko-Fuller (Associate Professor at Australian National University) in “Getting LOADED: Practical Considerations, Tools, and Workflows for Producing Linked Open Assyriological Data” (vol. 6 pp. 335–370). Moreover, the author describes some common tools such as Protégé or Web-Karma.

Even defining what “data” is, is undertaken by the editors of volume 6 and Randall W. Younker (Professor of Archaeology and History of Antiquity at Andrews University in Michigan) in their Introduction (pp. 1–17).

3 Textual Approaches

It comes as no surprise that most studies in the two volumes address textual approaches. Many of these employ databases to collect, structure, and analyze texts as data.

Among these is “The Amsterdam Database of New Testament Conjectural Emendation,” introduced by Jan Krans (Assistant Professor of New Testament Studies at the Protestantse Theologische Universiteit; vol. 5, pp. 44–67). The project ran from 2010 to 2016 and aimed to collect all scholarly suggestions for New Testament

conjectural emendations. As of 2022, the database encompassed 6900 entries. The large majority of these is not relevant for reconstructing the text of the New Testament; however, for the first time this tool allows the study of conjectural emendations as a whole and provides scholars with much useful information. It is particularly praiseworthy that the database has been integrated into the Virtual Manuscript Room maintained by the Institute for New Testament Textual Research in Münster, to ensure long-time accessibility and findability.

Another database closely connected to the field of biblical studies is that presented by Timothée Minard (Professor at the Institut Supérieur de Théologie Evangélique in Antananarivo, Madagascar) in his essay “Analyser l’emploi de la terminologie prophétique des manuscrits ‘non-bibliques’ de la Mer Morte en créant une base de données informatique” (vol. 5, pp. 118–145). He investigated the use of terminology relating to prophecy or visions (e.g., |

נבא, מראה, משיח, איש האלהים) in the non-biblical Dead Sea Scrolls. After searching for this terminology in two text collections of the software Accordance and deciding on which are relevant to answer the research question, the information of interest was put into the software Microsoft Access. The result is a database of relatively few entries, given that computers excel in analyzing large amounts of data (335 entries in 112 manuscripts plus 174 entries from reconstructed text). With this data in place, statistical analysis can be carried out about, e.g., which terms appear in which types of texts. Unfortunately, the database does not appear to be accessible to other scholars, since it was part of a research project on another matter.

An ERC project which ran from 2017 to 2023 is introduced by Élodie Guillon (Project Coordinator at Université Toulouse II Jean Jaurès) and Fabio Porzia (Associate Researcher at Universität Zürich) in their paper “Ancient Gods Going Digital: On the First Steps of the On-Going ERC Project ‘Mapping Ancient Polytheisms’” (vol. 6, pp. 247–285). The project investigated the strategies of how people have named gods (by use of names, titles, epithets, etc.) in Greek and North-West Semitic languages in (mainly) epigraphic sources from 1000 BCE until 400 CE. This large-scale, comparative approach to divine naming practices from the British Isles to Central Asia is particularly commendable as our modern disciplines often do not match the ancient exchange of cultures. At the same time, the paper shows how inherent challenges—including different disciplinary traditions, the lack of a

comprehensive corpus of North-West Semitic inscriptions, or organizing the large amount of data—can be overcome by the use of DH. The project succeeded in portraying width and depth, also by using comprehensive metadata (e.g., date, location, occasion), clear definitions, and adherence to existing or new standards.

The online database “Human Mobility between *Oriens* and *Transpadana* (98–604 CE): A prosopographical research” (HUMOT) is introduced by Elena Gritti (Junior Lecturer in Roman History at the University of Bergamo) in her essay “HUMOT: A Prosopographical Online Resource for Ancient and Late Antique History” (vol. 6, pp. 386–411). The information contained is about persons from Northern Italy (*Transpadana*) and the east of the Roman Empire (*Oriens*) as gleaned from various sources (including epigraphic, epistolary, judicial, etc.).

As can be seen so far, inscriptions are commonly organized and analyzed in databases, as their concise format fits this type of investigation perfectly. Another such epigraphic database was started in 2012 and is reflected upon in “The Wisconsin Palmyrene Aramaic Inscription Project: Its Digital Methods and Tools in Self-Critical Perspective” (vol. 6, pp. 224–246) by Preston L. Atwood (currently Head of School at Westminster Academy, PhD from the University of Wisconsin-Madison) and R. Jesse Pruett (2024 PhD from the University of Wisconsin-Madison). These more than three thousand (mostly Aramaic) inscriptions from Palmyra in Syria from the Roman period were to be collated, and those previously unpublished to be edited. A key component was the provision of high-quality photographs of the inscriptions by employing Reflectance Transformation Imaging (RTI) to preserve the objects, enhance readability of the text, and allow further analyses (e.g., of script).

Finally, the above-mentioned project on the Ebla Digital Archives as presented by Maiocchi and Milano fits within this category.

Databases or other forms of data collection are often the starting point to analyzing such data. What they can achieve is portrayed by a further group of studies within the volumes. Names of deities and people were at the heart of the projects by Guillon and Gritti. Now, Heidi Jauhiainen and Tero Alstola (both Postdoctoral Researchers at the Centre of Excellence in Ancient Near Eastern Empires at the University of Helsinki) study the semantic domains in which divine names appear in the Neo-Assyrian texts in the Open Richly Annotated Cuneiform Corpus (Oracc), as explained in “Fast(Text) Analysis of

Mesopotamian Divine Names” (vol. 6, pp. 139–171). This corpus represents a large collection of texts of different genres (mainly administrative letters, legal transactions, royal inscriptions, and astrological reports). Besides the use of an artificial neural network (a kind of artificial intelligence), the project employed different models, toolkits, and visualizations. These graphs, in turn, help understanding and create new research questions. The project leaves the reader excited to see which other corpora could be analyzed in this way and what we could learn from such large analyses of texts.

Another project that analyzes large amounts of data represents the Lexham Systematic Theology Ontology and how it is used in the Logos Bible software. Sean Boisen (currently Data Scientist at Biblica, previously Director of Content Innovation and Senior Information Architect at Faithlife) explains the approach in “Mapping the World of Theology” (vol. 6, pp. 412–434). Key concepts and terms that have been discussed in systematic theology since early Christianity are organized in a hierarchy of concepts and enriched with definitions, descriptions, key biblical passages, resources, and related concepts and data. The resulting ontology is used to index the text in the most used works in Logos, allowing for detailed, reliable search. Overall, this fruitful collaboration between information science and theology gains much of its power from corporate funding, and therefore remains exclusive to Logos users.

Joost Zwarts (Associate Professor of Linguistics at Utrecht University) considers “Mining and Mapping New Testament Metaphors and the Louw-Nida Lexicon” (vol. 5, pp. 68–87). The endeavor seeks to present a way for all | metaphors in the New Testament to be found by use of the *Greek-English Lexicon of the New Testament: Based on Semantic Domains* by Johannes P. Louw and Eugene A. Nida (New York, 1989) and then represented visually in open access. The essay shows glimpses of the potential of DH for studying larger corpora and Greek linguistics in general, but is limited by a number of methodological inaccuracies.

Digital editions of texts represent a large field within DH studies that relate to various disciplines in the humanities. Within the two volumes, only the essay on “Collaborative and Multidisciplinary Annotations of Ancient Texts: The Euporia System” (vol. 6, pp. 172–223) addresses such a text edition. Federico Boschetti, Angelo Mario Del Grosso, Anas Fahad Khan, Andrea Bellandi (all four Researchers at

the Institute of Computational Linguistics “Antonio Zampolli” of the Consiglio Nazionale delle Ricerche of Pisa), Luigi Bambaci (PhD 2023 in Jewish Studies from the University of Bologna), Gloria Mugelli (PhD student in Classics and Anthropology of the Ancient World at the University of Pisa and the École des Hautes Études en Sciences Sociales in Paris), and Andrea Taddei (Associate Professor of Ancient Greek Language and Literature at the University of Pisa) co-authored the essay. The extensive treatment addresses several smaller sub-projects as well as the greater system used by them called “Euporia,” which was developed at the Institute for Computational Linguistics “Antonio Zampolli” and the Laboratory of Anthropology of the Ancient World at the University of Pisa. First, the authors explain annotations, encoding of digital texts, and standards in DH text encoding (especially XML-TEI); second, they describe the project EuporiaQohelet, addressing scholarly editing and textual criticism; and third, they treat the project EuporiaRAGT, dedicated to using annotations in ancient Greek tragedies to retrieve knowledge about rituals. As a result, different queries can retrieve information on various scholarly questions.

Another common DH field of interest is manuscripts and the closely related matter of textual criticism. Thus, the study “Verse Metrics: Analysing Textual Families of Manuscripts Using a String Alignment Algorithm with a Test Case in the Arabic Gospels” (vol. 5, pp. 146–169) by Robert Turnbull (Senior Research Fellow and Data Specialist at The University of Melbourne) applies mathematics and computer science to determine how likely it is that manuscripts are from the same family. This was inspired by bioinformatics. By applying the procedure to Arabic manuscripts of the Gospels, the efficiency and accuracy of such a method stands out.

Since starting from databases and their limited entries, we have now reached projects that analyze texts in a broader, larger scale. The Pauline authorship of some of the New Testament writings has long been a matter | of contention—now, Ashley Roy (previously Research Data Analyst at the University of New Hampshire, now Capital Project Planning Analyst) and Paul Robertson (Senior Lecturer in Classics, Humanities, and Italian Studies at the University of New Hampshire) in their study “Applying Cosine Similarity to Paul’s Letters: Mathematically Modeling Formal and Stylistic Similarities” (vol. 5, pp. 88–117) use computational methods to achieve new results. The paper seeks to measure the similarity in style and form of the apostle Paul’s

seven undisputed letters as well as 2 Thess by mathematical modelling and visual representations of these results. The advantage of this method is that the length of the letters does not matter and that it is not word-based—a short-coming of previous approaches. The categories by which the letters are compared are based on Robertson's monograph *Paul's Letters and Contemporary Greco-Roman Literature: Theorizing a New Taxonomy* (*Novum Testamentum*, Supplements 167; Leiden, Brill: 2016). Accordingly, Rom, Gal, 1–2 Cor are the most similar, while 2 Thess reveals the greatest difference from the others. Yet overall, the letters reveal great similarity. In the end, the essay calls for more collaboration between qualitative and quantitative approaches to ancient texts. Thus, the essay provides a thrilling new approach (cosine similarity) for an old research question and enriches it with helpful graphs and charts.

4 Visual Analysis

Other than analyzing texts, some DH projects address visual representations of texts or objects. “Let There Be Light: Testing Byzantine Polycandelon and Glass Stemmed Oil Lamp Illumination” (vol. 5, pp. 170–184) by Bradley Erickson (Research Assistant in Archaeology and Digital Humanities at the University of North Carolina at Chapel Hill) addresses the question of the illumination of the Sepphoris synagogue. This endeavor sought to replicate and light the Byzantine glass stemmed oil lamps used in this synagogue and measure their luminosity, so as to accurately create a virtual environment. While the project is an example of experimental archaeology and therefore more loosely connected to the fields of early Jewish and Christian studies, it nicely shows how questions previously unanswerable can be addressed by interdisciplinary DH research and how new questions arise.

The essay titled “Three Priorities for Digitally-Enabled Research and Teaching in Manuscripts of Biblical Literature” (vol. 5, pp. 5–25) by Todd R. Hanneken (Professor of Theology at St. Mary's University in San Antonio and Director of the Jubilees Palimpsest Project) points out what needs to be considered when digitizing manuscripts in the field of biblical studies. The images | produced with different lighting (both visible and invisible to the human eye), spatial resolution, and color resolution can enhance various aspects of the manuscript but disguise

others. This is important, especially regarding elements beyond the visible text that are relevant to the study of manuscripts, like texture, color, binding, and erased text or annotations. There are three priorities for digitization: access (including interoperability, machine readability, preservation, etc.); first-hand experience (meaning that digital simulations should answer similar questions as when handling the actual manuscript); and what Hanneken calls “superpowers”—that which the digitization process can reveal but was previously obscured. In the future, scholars should test more manuscripts to confirm whether they contain previously unseen text by using multispectral imaging.

5 The DH Research Environment

Given the interdisciplinary nature of DH, scholars in the field constantly reflect on their tools, ways of publication, long-term preservation of results, and other aspects pertaining to the research environment. One such study is the essay titled “Speedy, Sleek Searching: Building Boolean Text Search Engines for Bibles” (vol. 6, pp. 289–315), by Drayton C. Benner (PhD in Northwest Semitic Philology from the University of Chicago and currently President of Miklal Software Solutions). It provides an in-depth outline and technical explanation of how to build a search engine tailored to Bibles.

6 Conclusion

After reviewing this sample of DH projects, the main thing that stands out is that DH research is broad.

- (1) The spectrum of complexity of the projects varied between more basic and more intricate. Accordingly, “more basic” DH projects employ computer-based methods that make the research easier and more time-efficient, but that could also be made by hand (like the Amsterdam Database that could be done in Excel, vol. 5, pp. 44–67). “More intricate” DH projects rely on computer-based methods to achieve results and often demand specific skills in computer science (like using different imaging techniques to analyze ancient manuscripts, vol. 6, pp. 5–25).
- (2) DH research encompasses a variety of objects, approaches, and research questions. From analyzing texts to visuals to creating

appropriate tools for researchers, there is no end to its use. |

- (3) DH projects invite collaborations across different fields of research. Not only do scholars from different disciplines in Classical studies work together, but they also collaborate with computer scientists or information specialists.
- (4) DH approaches do not just address old issues (like that of authorship attribution, vol. 5, pp. 88–117) or answer current questions (like naming practices of deities in antiquity, vol. 6, pp. 247–285), they also produce new ones in the process.

As a result, the need for standards and guidelines is crucial for collaboration and to achieve the FAIR principles.

Moreover, just like with other approaches to biblical studies, the research question and methodology are closely connected to the material and research object(s). For example, many inscriptions, letters, or papyri have a concise format that can easily be included in databases and consequently analyzed, while literary texts are often longer and pose different questions.

Among the challenges that digital biblical studies face are the limitations of project funding and responsibilities. Instead, future endeavors would benefit from being allocated to designated institutions or chairs to ensure their continued relevance. The varied nature of DH research also leads to the increased difficulty of making others aware of and engaged with it. To counter this, the DH community has a variety of mediums, like the project database on the website of the European Association for Digital Humanities.⁴ Yet, the necessity for spreading such information needs to be realized by both biblical scholars as well as DH experts.

Since the publication of the volumes, artificial intelligence technologies have made their way into the public awareness and use, which is why further application of such technologies will continue to revolutionize the field of digital biblical studies. Tools such as ChatGPT are already fairly proficient in Latin translations—imagine what more we could teach computers and learn about the ancient world by big data analyses.

Digital biblical studies are here to stay. They carry unimaginable potential and value for the field of biblical studies. Thus, the research community needs to become actively involved in guaranteeing its future success by educating the next generation of (digital) biblical

⁴ Cf. www.eadh.org/projects, viewed on 02.09.2025.

scholars. We need to seriously consider how to include DH approaches in university curricula. This will also make digital biblical studies less dependent on finding computer scientists who are willing to embrace the financial and contractual conditions of working in | academia. But more than that, it will enrich all aspects of university teaching, research, and collaboration.

All in all, both volumes showcase a large spectrum of projects from various fields and employing a range of different methods. Therefore, both will greatly benefit experts in DH as well as those new to digital approaches in biblical studies. The editors and contributors are to be commended for accomplishing such a fine task. Thus, we shall look out for the coming volumes of this series to continue to broaden our horizons.