Digital Humanities and the Future of Theology

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> Barth: "Das ist immer gefährlich, wenn die «Denkmodelle» kommen, wo dann das Neue
> Testament so hineingefüttert wird - so wie in einen Roboter oder wie nennt man das?"
> Zwischenruf: "einen Computer!" Barth: "Computer, ja. Es geht nicht gut so."[1]

Wie geht's heute with theology and the digital humanities? The offhanded worry that Karl Barth expressed in a conversation with theology students from Wuppertal has emerged as a central preoccupation of twenty-first century humanists. Observers frequently note that religious studies scholars have not kept pace with researchers in other disciplines in the application of digital humanities methods.[2] This point applies *a fortiori* to theologians. 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.

Theological questions have surfaced in the digital humanities, but they have not received much attention from professional theologians. The situation may be changing. Presentations on digital humanities in theology and religious studies are occurring more frequently at professional conferences.[3] The University of Durham even offers a masters degree in digital theology in association with the [CODEC Research Centre for Digital Theology](#).

Where do we go from here? What potential does digital humanities have to shape the practice of theology? Are there theological questions at stake? This essay is exploratory, aspiring to identify points of contact between the digital humanities and theology. My goal is not to survey this emerging nexus, but to look at major trends and to suggest some potential applications in theology. With apologies to those who work in different media, my focus is squarely on texts. Basically, what I ask is simple: how does digital humanities promise to alter the way we read and write theology?

Problems of Definition

A problem with writing about the influence of digital humanities on theology is that both have definitional ambiguities. To sum up any discipline with a succinct definition is a challenge. In his classic photographic collection *Philosophers*, Steve Pyke asked his subjects, academic philosophers, to define philosophy in two or three sentences. The definitions ranged from the sublime to the mundane, including the memorable counsel from the philosopher of law H. L. A. Hart labeling the idea "absurd" and advising Pyke to "drop it."[4]

The difficulty of providing a comprehensive definition for the digital humanities has become an inside joke among practitioners, who have filled a spreadsheet with proposed definitions.[5] My standard

rubric is that the digital humanities applies computational methods to the analysis of classical problems in the humanities. This definition begs the question of the role of computational tools in theological research. Theologians of every stripe rely on computers to do their reading and writing, from conducting library research, maintaining sets of digital index cards (or, in more sophisticated cases, databases), to formatting bibliographies, submitting to publishers, and producing back-of-the-book indexes, among other tasks. Does everything connected with computing in a broad sense belong to the digital humanities?

Caroline Schroeder, Professor of Religious Studies at the University of the Pacific, suggests that digital humanities is about more than employing computers in research and teaching; it's also about drawing on a canonical (but evolving) set of "standards, methods, and technologies that form a kind of cultural capital."[6] Schroeder's argument helps to explain why biblical scholars, despite using technologically-sophisticated applications for biblical study, have not received much recognition among digital humanists at large; while they may have developed expertise in computational analysis of biblical texts, their specialized tools exist at the "margins" of the digital humanities. While debate persists about whether digital humanities represents a disciplinary field, digital humanities as practiced cuts orthogonally across the humanities. An English professor working on a network analysis in Shakespeare's plays can fruitfully compare methodologies with a historian of the Enlightenment studying networks of literary correspondence and an art historian analyzing the emergence of artistic schools. The disciplinary content differs greatly, but the methods and tools they use provide common parlance. If theologians want to enter the digital humanities, they need also to embrace these tools or, as Schroeder proposes, critically engage with the digital humanities canon from its margins.[7]

If we are exploring the concept of "digital humanities," we need also to look at the other side of the conjunction. How do we define the humanities? Does theology count among them? The field of religious studies undoubtedly numbers among the humanistic disciplines, but theology does not study expressions of religious behavior or, at least, not all theologians conceive of theology in this sense. Scholars in the nineteenth and twentieth centuries spent a great deal of ink outlining taxonomies of the sciences, seeking to place theology among the disciplines.[8] The general consensus of these efforts is that theology does not line up on one side of the divide between the sciences and the humanities, the natural and the moral sciences, etc. Theology, taken at face value as "the science of God," cannot be limited to a single perspective on the relationship between God, the world, and humanity. The subject matter of theology is elusive or, to use an overloaded term, dialectical. Karl Barth argued that the separate existence of theology as a discipline poses a paradox since theology does not have a distinct domain of study. As Barth asked in *Evangelical Theology*, "Should not the isolated existence of theology be understood as an abnormal fact when judged by the nature of theology, as well as by that of the other sciences?"[9] Theology exists because the world is out of whack or, to use the idiomatic Christian term, "fallen."

The upshot of these reflections is that theologians aspiring to work in the digital humanities must perform a double act of interpretation. On the one hand, theologians must engage with the methodologies of the digital humanities, or at least approach them from the margins, ascertaining their possibilities and limits for theological research. On the other, they have to apply these approaches to data where nothing is straightforwardly theological and yet everything is susceptible to theological interpretation. If you want, you could term digital humanities in theology a two-fold dialectic as it requires both a digital and a theological hermeneutical leap of faith. Or, to use less fancy terminology, you might say that using digital humanities tools for theological ends requires a doubly capacious imagination.

Reading Theology Digitally

Studying theology is an act of intellectual humility. The humility arises primarily from theology's pretension to know a God who transcends human understanding. But, more prosaically, there's a lot of theological texts to read. The written theological record extends back millennia. While some texts have become archaic, we cannot say with surety that any are definitively out-of-date. Theological knowledge is not straightforwardly (or even indirectly) cumulative. The theological loners and outliers bear crucial witness. Theological schools that looked liked dead ends may have proved fruitful under altered circumstances. If Richard Rorty warned against adopting a "whiggish" view of science, his counsel applies as strongly to theological historiography.[10]

Thomas Gillespie (1928–2011), former President of Princeton Theological Seminary, liked to impart the advice of his teacher, the theologian George S. Hendry, to incoming students.

> It was George Hendry…who challenged us one day to visit the library and stand humbly before the five hundred volumes in the Migne collection, which represents Greek and Latin patrology up to the ninth century A.D. Perhaps our professor was sensing that we were beginning to feel our oats in our new-found knowledge of God and wanted us to see ourselves in some realistic perspective. Whatever his motivation, I took him up on the idea and found my way to the Migne collection. … Five hundred volumes of what Christians thought about God in only the first nine centuries. They compelled me to recognize that I did not and never will carry the whole ocean of the knowledge of God in my little tea cup.[11]

I heard President Gillespie preach this sermon in Miller Chapel during my first year at Princeton Seminary. I must have taken the message to heart because, against expectations, I became an academic librarian, spending my days walking up and down rows of texts that I would never read. Humility before the Word and the words shaped me as a theologian and a librarian.

But what if we *could* read everything? What if we could summon texts at will and ask them questions? What changes?

Gillespie delivered his admonition near the opening of the Internet era and, at that point, no digital editions of the *Patrologia Graeca* and *Patrologia Latina* existed. Librarians already provided access to digital indexes and editions before the Internet, of course, but these were trapped in towers of CDs or served over slow modem connections, and with limited search features. Today, anyone with an Internet connection has access to better information tools than those available at the best libraries in the world when Gillespie delivered his sermon. If I'm starting out on a research project, I conduct keyword searches in Google Scholar to find relevant journal articles and Worldcat to explore the monograph literature. The Internet Archive and the HathiTrust provide overlapping sources of data. While I still read physical books, I routinely identify the information I need before heading to the library shelves.

Access to information at this scale has not, at least according to my subjective perspective, fundamentally changed theological pedagogy. Faculty continue to offer survey courses and seminars. In the surveys, students might be assigned anywhere from six to a dozen books, depending on the ambitions of the faculty member. In seminar courses, faculty generally assign fewer readings but expect students to engage with them more deeply. The most memorable courses of my seminary education focused on close readings, examining Schleiermacher's *The Christian Faith*, Tillich's *Systematic Theology*, or a volume of Karl Barth's *Church Dogmatics* in depth during a semester.

Franco Moretti refers to close reading of this kind as "theological."[12] What he means by the term requires unpacking, but it's safe to say he does not intend it approbatively. In his *Distant Reading* (2013), Moretti contrasts close reading with "distant reading," the computational analysis of literary corpora. While a distant reading of a corpus of literature-say nineteenth century theologians-considers major works alongside the forgotten treatises of minor theologians, close readings focus on great works alone. This narrowing of the field to the hundred odd books that faculty assign in the course of a theological education raises the question *why* these books and not others. The answers can become frustratingly circular. These texts "have stood the test of time" and have become "classics." Does this mean any more than faculty have continued to assign them? If we claim it means more, we enter into philosophical or theological territory.[13] Moretti, by contrast, is not concerned with the question of the classic, but with the shape of world literature as a whole, where the mundane and ordinary dominate. He writes,

> If you want to look beyond the canon...close reading will not do it. It's not designed to do it, it's designed to do the opposite. At bottom, it's a theological exercise-very solemn treatment of very few texts taken very seriously-whereas what we really need is a little pact with the devil: we know how to read texts, now let's learn how *not* to read them.[14]

While Moretti advocates lightheartedly for this diabolical pact, taking up his challenge may prove more difficult for theologians than literary theorists. An implicit providence of reading operates among theologians, which assumes that the Spirit guides us toward the right books to read. We find biblical roots for this faith in the consumable scrolls in Ezekiel 3:1-2 and Revelation 10:9-10. The *locus classicus* of this theology of providential reading is Augustine's *Confessions*. As we recall, Augustine was lamenting his sins in despair when he heard a child's voice repeating "Tolle, lege" ("Pick it up and read it") and interpreted this phrase as divine counsel. He returned to his friend nearby and, picking up the Bible, turned to the first passage he lighted on with bleary eyes: Romans 13:13-14. Reading the passage formed a crucial turning point in his conversion.[15]

The belief that the Spirit guides us providentially to texts has become a trope among Christians, a regular feature of conversion narratives. Among modern theologians, Abraham Kuyper (1837-1920) is exemplary in his adherence to a theology of providential reading. In his *Confidentially* (1873), which documents his conversion from theological liberalism to orthodox Calvinism, Kuyper described two spiritual episodes related to reading and literature.[16]

In the first, he received a copy of Charlotte M. Yonge's (1823–1901) *The Heir of Redclyffe* (1853) from his pious but less educated fiancée, Johanna Schaay (1842-1899).[17] The message of Yonge's novel, which contrasts an urbane, arrogant character with an humble, spiritually mature protagonist, bowled Kuyper over and forced him to recognize his own arrogance in his relationship with his soon-to-be wife. "Oh, what my soul experienced at that moment I fully understood only later. Yet, from that moment on I despised what I used to admire and I sought what I had dared to despise!"[18] The book appeared in Kuyper's hands at a providential moment, a gift inspiring a spiritual conversion.

A secularized form of this providential theology of reading persists in the concept of "serendipitous discovery." The library to scholars and students is not viewed as a machine for organizing, describing, and making information accessible, but a space for serendipitous encounters with the unexpected, the delightful, and the provocative. In "Serendipity in the Stacks: Libraries, Information Architecture, and the Problems of Accidental Discovery," Patrick L. Carr, Associate University Librarian at the University of Connecticut, notes the religious overtones of serendipity.

> Beyond being a "special moment," serendipity in the stacks can include a spiritual dimension. Indeed, according to Jeffrey T. Schnapp and Matthew Battles, readers throughout recorded history have shown a tendency to regard serendipitous discoveries as spiritual revelations. This perception is evident, for example, in English literature scholar Nancy Lusignan Schultz and novelist Anne Lamott's characterizations of serendipitous discoveries in the stacks as "small miracles" and in Hoeflich's characterization of such discoveries as "blessings."[19]

Movements toward efficiencies like digital catalogs, offsite storage, and web-scaled discovery tools may spark resistance among patrons, who fear such rationalizations will inhibit accidental discoveries. Carr worries that catering to such patrons panders to "nostalgia for a fading world in which information was scarcer and less structured."[20]

Digital libraries short-circuit stories of scholarly providence. In a second episode from *Confidentially*, Kuyper narrated his search as a student for the published works of Johannes à Lasco (1499-1560). He intended to write a paper for the prize contest at the University of Groningen, which had called for papers comparing John Calvin's and à Lasco's concepts of the church. While Kuyper readily found the necessary sources for his study of Calvin, he could not locate the works of à Lasco in any Dutch library. The forces of the Counter-Reformation had destroyed the large majority of à Lasco's publications. Kuyper recounted that he searched in the libraries of The Hague, Utrecht, and Groningen and then expanded his inquiries to Paris, St. Petersburg, and London, finding no collection holding more than four publications.[21] Discouraged, he consulted an academic advisor, Matthias de Vries (1820-1892), who suggested that he begin scouring the private libraries of the Netherlands, starting with his father's pastoral library in Haarlem. Kuyper agreed, less from conviction than from obligation, and contacted the old pastor. The pastor told Kuyper that he did not believe that he had any à Lasco volumes among his collection of church history but that he would check and that he could visit in a week. When Kuyper showed up, the pastor ushered him in to see a table full of rare books by à Lasco. Kuyper considered this discovery a miraculous sign.

> To find this treasure–for me, the 'to be or not to be' of the contest–with a man to whom I had been referred by a good friend, who had no idea that it was to be found, indeed, who just a week earlier barely remembered the name of à Lasco and could not say whether there was anything among his precious books written by the Polish reformer... is to encounter a miracle of God on life's journey.[22]

What Kuyper regarded as wondrous is now commonplace for anyone with an Internet connection. I can search WorldCat for libraries that hold original editions of à Lasco and at least some digital facsimiles of his work at the Internet Archive and the HathiTrust, including Kuyper's own two volume edition of the à Lasco oeuvre. The collaboration among academic libraries that makes it possible to search and retrieve this information alone is incredible, but that's a miracle of a different order, namely, a testimony to the spectacular gains of information science and software engineering during recent decades.

Will undermining the myth of serendipitous discovery lead to a "demythologization," so to speak, of intellectual genealogy in favor of bibliometry and related statistical approaches to literary influence? Or will serendipity reappear in new forms? As Tim Hutchings notes, reading the Bible on Facebook "shifts experience away from the voluntaristic act of setting aside time for concentrated reading

toward serendipitous encounters with unexpected words inserted in the flow of everyday communication."[23] The breaking down of the boundaries between the Book, books, and the "flow of everyday life" may produce new forms of serendipity, but also provoke novel kinds of consternation.

The claim that we can 'read' a library without studying or skimming any of its books has, predictably, raised the hackles of literary critics. Stanley Fish argued in a blog of *The New York Times* from 2012 that the ambitions of digital humanists to view literature as an open, participatory, and nonlinear "collective" tacitly presupposes a theological perspective.

> The vision is theological because it promises to liberate us from the confines of the linear, temporal medium in the context of which knowledge is discrete, partial and situated — knowledge at this time and this place experienced by this limited being — and deliver us into a spatial universe where knowledge is everywhere available in a full and immediate presence to which everyone has access as a node or relay in the meaning-producing system. In many theologies that is a description of the condition (to be achieved only when human life ends) in which the self exchanges its limited, fallen perspective for the perspective (not a perspective at all) of union with deity, where there is no distance between the would-be knower and the object of his cognitive apprehension because, in Milton's words, everyone and everything is "all in all."[24]

Fish contends, in other words, that digital humanists take a God's eye perspective on textual corpora. As Boethius wrote in *The Consolation of Philosophy*, "… For it is one thing to be drawn out through a life without bounds, which is what Plato attributes to the world, but it is a different thing to have embraced at once the whole presence of boundless life, which it is clear is the property of the divine mind."[25] If we set out to read an entire corpus, we could finish given an adequate duration.[26] Given enough time, a finite being could read an entire library, but would inevitably forget what had been read at the beginning before reaching the end. By contrast, God, according to Boethius, sees all moments at once, viewing them simultaneously like a scroll unfolded infinitely in space. While we may quibble about the nature of eternity and the potential for human beings at the eschaton to overcome the limits of finitude, Fish's detection of an underlying messianism in the digital humanities is not misplaced. To hold a whole literary corpus in view simultaneously would be an eschatological experience.

The scatter plots and regression lines that typically emerge from "distant readings" will disappoint anyone who thinks that the digital humanities might evoke apocalyptic visions, however. While, as we shall see, text mining and stylometry provide new ways of looking at texts, they sacrifice the richness of close reading for abstractions. Like reading with a flashlight in a library at night, we can illumine a page or scan across the shelves; the digital humanities shines a beam of light in new directions, but does not switch on the overhead lights of omniscience.

Text Mining

Concerns about implicit theologies of close and distant reading obscure the down-to-earth aspirations of digital humanists, namely, to produce better readings of texts. Let's consider some practical examples, first of text-mining and then of stylometry.

In *The Distant Reading of Religious Texts: A "Big Data" Approach to Mind-Body Concepts in Early China*, for instance, the authors seek to shed light on a scholarly debate about how *xin* (心), meaning "heart" or "mind," relates to the body in classical Chinese texts.[27] Does *xin* exhibit a distinctive relation to terms for body in those texts or does it share the same relationship as other bodily parts to the whole? The authors apply multiple computational approaches to the "Chinese Text Project," which they describe as "a massive textual dataset composed of 96 texts totalling 5.7 million characters."[28] Their digital soundings confirm one another, supporting their argument against any strong form of mind-body holism in classical Chinese texts.[29]

Researchers in information science have likewise applied analogous statistical techniques to read and classify corpora in religious and theological studies, though without drawing on the terminology of the digital humanities. For instance, a group of Korean researchers published an analysis in 2013 of nine Korean theological journals to determine co-occurrences of terms and to map them out as a so-called 'pathfinder network.'[30] Again, while explaining the technical details is not possible here, the researchers used this technique to classify the journals' primary topic areas and to group journals together. While the three clusters they identified are not unexpected, namely, "Reformed theology, general theology and evangelicalism," the pathfinding networks illustrate divergent areas of interest and also bridging terms.[31] In related fashion, Christopher Scott Bailey and Eric Rochester have applied topic modeling to a theological debate about Karl Barth's *Church Dogmatics*. In a paper at DH2016 titled "Testing the Doctrine of Election: A Computational Approach to Karl Barth's Church Dogmatics," Bailey and Rochester shared their work-in-progress to use topic models to identify thematic development and, potentially, conceptual disjuncture in Karl Barth's *magnum opus*.[32]

Another example of text mining comes from a digital humanities graduate seminar that Dave Michelson and I led in spring 2014.[33] The seminar taught students to encode texts using TEI and to analyze their contents with XQuery. R. Aaron Doenges, a member of the seminar, presented a final project that visualized scriptural references to Job within Christian hymns.[34] The project illustrated the minority of verses that have captured Christian hymnologists' attention against the background of the majority that have not.

On a larger scale, Lincoln Mullen, assistant professor in the Department of History and Art History at George Mason University, has analyzed approximately 10.7 million American newspaper pages from the 1840s to the 1920s for his *America's Public Bible Project*.[35] The interactive visualizations at his site

document the popular (and, by implication, neglected) verses across these decades of mid-nineteenth and early twentieth century. "By looking at uses of the Bible in newspapers," he writes, "we can see which parts of the Bible were in common currency among Americans, as well as the range of interpretations that were given to those verses."[36] Mullen's project opens windows into the cultural life of the Bible in America, moving away from the sublime of theological texts into the mundane of newspaper journalism.

The question of whether there is (or should be) a canon within the canon of scripture continues to prompt theological debate.[37] The application of text mining to the literature of theology would not resolve these debates, but it brings empirical clarity to them by exposing functional canons as Doenges and Mullen have sought in different ways to do. If we had the data, we might also be able to classify and distinguish schools of theology (as distinct from denominations) by illustrating the functional canons at work in corpora of sermons, Sunday School materials, and catechetical publications.

Text mining might become essential to the execution of theological research programs. Take the methodological proposal of the young Karl Barth, for instance. In his so-called *Göttingen Dogmatics*, a posthumously published cycle of theology lectures from 1924-1925, Barth proposed to begin with preaching when studying theology. In a chapter titled "Preaching as the Starting Point and Goal of Dogmatics," Barth argued that Christian proclamation is the *Rohstoff* ("raw material") of dogmatics.[38] Theologians should begin with what Christians speak in the name of God, analyze those expressions, and critically test them against dogmatic formulations.

To my knowledge, Barth carried out this procedure in a single publication, *The Theology of Schleiermacher*, which he delivered in Göttingen during the Winter Semester of 1923/1924.[39] Barth carried out his critical analysis by analyzing three series of Schleiermacher's sermons: the sermons he gave during his final year of life, a selection of christological sermons he preached on church holidays throughout his pastoral career; and nine sermons on family life (*Hausstandspredigten*) he delivered in 1818. Barth was effectively sampling Schleiermacher's proclamation, choosing to analyze sermons synchronically, diachronically, and topically. The samplings provided insight into how Schleiermacher applied his theology in practice and served as the point of departure for the critical investigation of his dogmatic writings.

While Barth argued in principle for this methodological approach, he did not apply it as narrowly in later theological studies. While the small-print sections of the *Church Dogmatics* contain citations from sermons from various eras of church history, he did not conduct any empirical analysis of contemporary proclamation. As Kevin Hector points out, the lack of empirical data makes it problematic to assign theology the critical task of evaluating the proclamation of the Word of God in light of its object. "If a theologian means to hold proclamation accountable to the word of God," argues Hector, "it would appear that he or she had better find ways of discerning what is actually going on

with such proclamation...."[40] Hector contends that "proclamation-centered theology...would require theologians to engage in some kind of ethnographic work."[41] While agreeing with Hector that "a proclamation-centered theology" demands more than theological intuitions about proclamation, might the curation and text mining of a corpora of sermons provide a scalable and reproducible alternative to adducing such empirical evidence through ethnography?

Stylometry

Another powerful set of computational techniques falls under the name "stylometry." Briefly put, stylometry is the statistical analysis of authors' writing patterns. Stylometry takes an inverse approach to data-mining projects. Whereas data-mining seeks correlations among significant terms, dropping stop words and other minor terms as extraneous noise, stylometric analysis begins at the other end, searching in those superficialities for authors' unwitting digital signatures.

Stylometry is not an invention of the digital humanities. Wincenty Lutosławski (1863–1954), a Polish philosopher, coined the term in the late nineteenth century. In a summary of a paper he presented on his "new science" to the Oxford Philological Society in May 1897, he used statistical analysis to group the Platonic dialogues in temporal order. His leading principle was what he termed "law of stylistical affinity," namely, that "Of two samples of text of the same author and of the same size, that is nearer in time to a third which shares with it the greater number of units of affinity."[42] From a contemporary perspective, the most remarkable aspect of Lutosławski's study is his marshaling of the data: he reports that he analyzed 500 stylistic markers across 58,000 observations by hand.[43] We may both celebrate and regret that the advent of modern computing renders this form of scholarly heroism obsolete.

Stylometric analysis finds natural application in biblical studies. In a brief review of stylometry in New Testament studies at the opening of his own textbook on the topic, Anthony Kenny notes that proposals to authenticate biblical authors using tokens of literary style go back as far as 1851.[44] David Mealand, Honorary Fellow in the School of Divinity at the University of Edinburgh, maintains a website with links to stylometric research in New Testament studies.[45] In an article titled *The Extent of the Pauline Corpus: A Multivariate Approach*, for instance, Mealand attempts to discriminate the Pauline from the Deutro-Pauline epistles as well as to show the relation of the Pauline corpus to other New Testament letters; he employs sophisticated statistical techniques in combination with the software package SAS.[46] While pitfalls abound, including accounting for variant manuscripts[47] and the potential contributions of amanuenses, the growing sophistication of software packages for stylometric analysis in the digital humanities promises to provide a lift to this sub-discipline of biblical studies.

Stylometry has theological applications apart from biblical studies. Matthew L. Jockers has published two authorship studies on the *Book of Mormon*: the first, co-authored article examined stylistic evidence for its multiple (modern) authorship[48] and the second, single-authored work defended the decision to exclude Joseph Smith from the analysis on the basis of the paucity of authenticated personal writings.[49] Given the availability of digital editions and open source packages, stylometry may shed light on other controversial authorship questions. For instance, Suzanne Selinger notes that "there is a persistent rumor (which lives on as part of U.S. seminary lore) that she [Charlotte von Kirschbaum, Karl Barth's longtime secretary] wrote the notes–the lengthy, small-print discussions of sources and interpretations that run throughout [the *Church Dogmatics*]."[50] While acknowledging some basis for these rumors, Selinger contends that the quantitative question cannot (and should not) be the basis of appraising von Kirschbaum's contribution to the *Church Dogmatics*.[51] In fact, she contends that "a reader can read published small-print sections of *CD* and published writings of von Kirschbaum and recognize immediately" the difference in authorship.[52] Would stylometric analysis to discriminate authors in the small-print sections of the *Church Dogmatics* confirm this intuition?

The advent of computational stylometry makes tackling such questions easier, but not necessarily more definitive. Depending on the approach, text mining and stylometric analysis may involve statistics, machine learning, and complex data transpositions. The experts in these fields publish papers full of mathematical symbols to account for their models. The average digital humanist may read those papers, glossing over the mathematical notation while picking up the gist of the techniques. If they want to try them out without much cost, they may turn to a web service like Voyant[53] or experiment with open source languages like Python or R, a statistical computing language widely used for data science. Packages exist for stylometry[54] and text mining[55] in both languages as well as numerous others. These packages encapsulate the mathematics, letting practitioners focus on the application. The programming skills required to interact fruitfully with these languages and libraries are attainable; learning the basics takes days and weeks rather than months and years. Grasping the statistical methods that these packages use is the more difficult exercise.

Writing Theology Digitally

As is frequently observed, the popular history of digital humanities traces its origins back to a theological scholar, Roberto Busa (1913-2011), who worked on a distinctly theological text, the *Corpus Thomisticum*. As Ashley Reed notes, "his role as a Jesuit priest and professor of theology places the early years of the digital humanities squarely in the field of religious studies."[56] Busa completed a dissertation in 1949 titled *La terminologia tomistica dell'interiorità: saggi di metodo per un'interpretazione della metafisica della presenza* (The Thomistic Terminology of Interiority: An Effort at a Method for an Interpretation of the Metaphysics of Presence). His scholarly research involved detailed literary

analysis, eventuating in the production of an index of 10,000 note cards indicating the location in the corpus of his key terms.[57] He dreamed of making this kind of literary study less painstaking for future scholars by creating a complete concordance of Thomas Aquinas's writings. Specifically, he aimed to produce a *lemmatized* version of the *Corpus Thomisticum*, that is, an index that lists variants of Latin words under the root form from which they derive.

Busa's plan for the concordance was not novel, but the scope of the corpus put the project out of the realm of possibility for an individual scholar. Taking advantage of the international reach of the Roman Catholic Church, Busa arranged a meeting with Thomas J. Watson (1874-1956), C.E.O. of International Business Machines (IBM). The brief meeting between Busa and Watson has become "the founding myth" in the history of digital humanities.[58] The partnership proved successful, though the project took much longer than Busa and Watson (or his executives at IBM) anticipated. Tim Hutchings points out that numerous projects followed in the path Busa blazed, leading to biblical concordances and databases of primary sources.[59] We may say expansively that, while Busa did not develop the concepts of "distant reading," text mining, and stylometry, these diverse techniques share in common his interest in bringing latent information in texts to the surface.

We owe a lot to Busa's pioneering work, but not everything in digital humanities proceeds from his example. A panel at the Digital Humanities 2017 conference in Montréal contested the notion that digital humanities has any single founding story. Titled "Alternate Histories of the Digital Humanities," the panelists explored different vectors of scholarship that gave rise to the digital humanities, including community-engaged digital activism, feminist filmmaking, steampunk, and others.[60] In a similarly inclusive spirit, we need to credit the OuLiPo or *Ouvroir de littérature potentielle* (Workshop of Potential Literature) as a progenitor of the digital humanities.[61] Roughly speaking, the OuLiPo aspired not to represent, but to *remix* texts. While the relevance of Roberto Busa's efforts is evident to theologians, I believe the perspectives of the OuLiPo may become more significant to the future of digital humanities in theology.

What is the OuLiPo? The movement began in 1960 as secret literary society in Paris, bringing together avant-garde writers like Raymond Queneau (1903-1976), contemporary artists like Marcel Duchamp (1887-1968), and scientists like François Le Lionnais (1901-1984). The confluence of artistic, literary, and scientific interests led the OuLiPo to explore the concept of algorithmic literature, that is, the production of literary works through 'computational' schemes and transformations. The relation between words and numbers, rhyme and reason,[62] literature and mathematics goes back a long way, to the origins of writing itself. Forms of Hebrew poetry, for instance, follow logical sequences, most demonstrably in acrostic poems like Psalm 119 but also extending to complex forms of chiasm in both the poetry and prose of the Hebrew Bible.[63] Similarly inspired by mathematics, the OuLiPo created

rules for literary production, developing literary methods that may be classified as algorithmic according to Stephen Ramsay.[64]

From the beginning, the OuLiPo questioned whether computers could advance their agenda. Mark Wolff, Associate Professor of French and Modern Languages at Hartwick College in Oneonta, New York, relates "when the Oulipo formed in 1960, one of the first things they discussed was using computers to read and write literature."[65] A "top secret" addendum to a report from December 22, 1960 reads: "Two of our most devoted members have given themselves the task of interesting the firms IBM and BULL [Bull Information Systems, a French computing company] in our work. Their goal is to attempt to use electronic machines for different works of literary analysis in the context of the activities of the OuLiPo."[66] As Wolff notes, the proposal subsequently raised methodological questions. The OuLiPo did not want to cede literary production to the computer, as the Surrealists had yielded to the unconscious in their concept of "automatic writing."[67] The OuLiPo denied wanting to automate literary production, aiming instead to create structures for literary forms.[68] According to Wolff, members of the OuLiPo demanded insight into algorithms, worrying that "If the computational system becomes too complex or too unpredictable, the act of interpretation will depend on opaque sequences of data processing of which the user must remain unconscious."[69] The task of comprehending continues to bedevil digital humanists as software becomes more complex and modular. As contemporary programers increasingly rely on "libraries" or "packages" others have composed to carry out sophisticated tasks, fewer of them grasp the algorithms at play. While digital humanists also depend on third-party code in their work, they attend more explicitly to the implicit biases and assumptions inscribed in software.[70] In 1981, a group of computationally-oriented writers spun off the *Atelier de literature assistée par la mathématique et les ordinateurs* (ALAMO) to pursue these questions more directly.[71]

What if we seek not to understand a corpus but to explore its potential? In a brief survey of emerging forms of "data-driven literature," Chris Rodley and Andrew Burrell remark that "a sense of playfulness often pervades" such experiments.[72] Might the generative exercises of the OuLiPo and the ALAMO provide us with a model, if not a roadmap, for such playful engagement with theological texts? Could we consider our algorithms as collaborators in the act of reinterpretation or re-production of new literature from old corpora?

Tyler Cowen, Professor of Economics at George Mason University, argues in *Average Is Over* that so-called freestyle chess offers a glimpse into a possible future of human-computer collaboration.[73] The concept of freestyle chess (a form of "advanced chess") is the competition of teams of humans aided by chess software.[74] The teams seek the optimal mix of computer analysis and human judgment to give them a winning edge. Freestyle teams can beat grandmasters in chess as well as the best chess software operating in isolation. As Cowen notes, analogies to this cooperation of humans and machines

will "revolutionize much of our economy."[75] Is a similar phenomenon taking place in higher education? Certainly, the booming field of educational technology aspires, for good or for ill, to compliment and, as some fear, to supplant human instructors.

The dream of a creative machine goes back a long way, of course. In *Natural Histories* (1966), Primo Levi published a one-act play titled "The Versifier" about a machine that generates poetry. Facing an imminent deadline, a harried composer of commercial verses rings up Simpson, a sales representative, for a trial of the machine. Simpson explains how the machine works.

> Here's the keyboard: it's similar to the ones found on organs and Linotype machines. Up here (*click*) you put in the subject–from three to five words are enough. These black keys are the selectors: they determine the tone, the style, and the "literary genre," as we used to say. These other keys define the metrical form.[76]

Apart from a blown fuse, the machine tackles the poet's assignments with panache–and Simpson makes his sale. Primo Levi concludes the short story with the poetical narrator addressing the audience directly, admitting that the "text you have just heard…was composed by the Versifier,"[77] leaving them to wonder recursively where the human stops and the algorithm begins.

In 2005, three students at MIT created a software program called SCIgen.[78] The software generates fake scientific papers designed to fool organizers of low-quality commercial conferences. The tool relies on a mixture of scientific clichés and word lists for its output–like a digital form of the "Mad Libs" word game. The tool has proven too successful, not only deceiving fake conference organizers but also passing through peer review and publication processes. In "Duplicate and Fake Publications in the Scientific Literature: How Many SCIgen Papers in Computer Science?", Cyril Labbé and Dominique Labbé developed methods to identify SCIgen papers and tested them against papers in the proceedings of ACM, IEEE, and other reputable conference organizers. Among their findings is that "24 different conferences have been 'infected' between 2008 and 2011" with fake papers.[79] From the data, it appears that SCIgen, while developed to shame fraudulent conference organizers, may actually be meeting a need for professors feeling the pressure to publish. If so, market demand may lead to more sophisticated, less-easily detectable algorithmic paper generators designed to help faculty facing "publish or perish" deadlines.[80]

Will similar software emerge for pastors who have procrastinated until Saturday night to draft their sermons? The spirit of OuLiPo has already arrived in American evangelicalism. The satirical website Babylon Bee offers a tool that generates sermons.[81] From appearances, the site operates like Raymond Queneau's *Cent Mille Milliards de Poèmes* (1961), a combinatorial poetry generator that contains potentially 100,000,000,000,000 poems.[82] Babylon Bee's "Sermon Generator" provides "basically an infinite number of combinations" of sermon outlines with titles and three points. To my knowledge, a

SCIgen (or SERgen?) for sermons does not yet exist. Given the practical reliance on cliché in prayers and sermons, the emergence of a SERgen seems predictable and, indeed, might improve the quality of sermons overall.

In the short term, though, it is more likely that pastors will come to rely on computational tools to analyze and improve their sermons than to generate them from scratch. In analogy to freestyle chess, these tools will help pastors to avoid mistakes and blunders in their preaching while also drawing on existing homiletic corpora to guide their rhetorical moves.

Indeed, researchers are already envisioning these computational digital writing tools. In a remarkable thesis titled "Narrative Composition in the Context of Digital Reading", Cyril Antoine Michel Bornet introduces the concept of "distant editing."[83] Bornet notes that we already rely to a significant extent on automation when we write, "with spelling and grammar tools, but also statistics, auto-completion and stylistic suggestions."[84] Digital humanities teaches us to pay attention to these "affordances" and how they shape our literary production.[85]

Distant editing, as Bornet envisions it, works at a different level, shaping our perspective on how we organize ideas in literary form. As with "distant reading," tools for distant editing are designed to push writers to a higher level of abstraction so that they can focus on the organization of their ideas rather than how they express them. "Considering texts from a distance was indeed one of the core ideas that kept coming on and on in most aspects of our work," writes Bornet of his collaboration with a novelist. "…Given an admittedly more external reading, this artificial distance imposed by visualization tools might also exhibit features that are closer to a reader's perception, and thus help mitigate between the idea a writer has of his text, and the actual message it conveys."[86] How would the writing of theology benefit from such distant editing? Would tools for creating that distance help to build bridges between academic theology and popular theology by giving professional theologians greater insight into how everyday Christians read and digest their ideas?

Where to Go from Here?

The future course of digital humanities in religious and theological studies is still uncharted. While digital media have become pervasive in the lives of students, faculty, and administrators at seminaries and divinity schools, appreciation of their scholarly potential remains nascent. Also undervalued is the challenge of digital humanities to scholarly communications in theology and religious studies. As I wrap up these soundings, let us briefly look at how digital humanities reshapes the scholarly means of production.

The American Academy of Religion, the primary guild for scholars of religion and theology, has moved to increase the acceptance of digital scholarship by proposing *AAR Guidelines for Evaluating Digital Scholarship*[87] The guidelines include genres that would have fallen outside the scope of faculty research and publication in the past, including building archives, developing digital tools, creating digital games, and fostering access to data sets and APIs. The guidelines note that the outputs of these activities require explicit plans for digital preservation. The authors also observe that digital scholarship is frequently more collaborative than traditional modes of scholarly work. "Digital scholarship tends to be collaborative in that it not only can involve several scholars at multiple institutions but can also incorporate a variety of professions such as computer programmers, librarians, and even students."[88] The rise of "alt-ac" scholar tracks the upswing of the digital humanities, but whether the relationship is causal or correlative is not clear.[89] As the field of digital humanities becomes more prominent, it impels the development of laboratory models, bringing together contributors with different sets of skills and, crucially, different locations and status in the academy. Combined with the dismal job market in the humanities (and, in particular, religious studies),[90] organizing and operating these digital humanities labs, whether formally or informally organized, creates questions about equity, status, and inclusion.

Conclusion

Does digital humanities have potential to reveal anything that we don't already know about theology? A perennial criticism of computational approaches in the humanities is that, while producing flashy visualizations, they do not deliver novel findings. The validity of this criticism depends, I think, on what we expect computers to help us find.

John Updike anticipated this line of criticism in his novel *Roger's Version* (1986). In that novel, Dale Kohler, a brash graduate student in computer science, seeks a grant from the divinity school at his university to model the universe computationally with the hope of finding traces of its Creator. Roger Lambert, a professor of theology, sponsors his grant application for a variety of motives, but partly to show its theological audacity and fruitlessness. Updike compares Dale's quest to building a Tower of Babel during a pivotal, feverish scene: "...Dale still hopes–he is greedy, spiritually greedy; he is climbing his Tower of Babel–for a graphic confrontation, a face whose gaze could be frozen and printed."[91] Lambert, meanwhile, struggling with his faith and envious of Dale's conviction, turns to a passage for solace that he faintly recalled from Karl Barth's *The Problem of Ethics Today*: "There is no way from us to God–not even a *via negativa*–not even a *via dialectica* nor *paradoxa*. The god who stood at the end of some human way–even of this way–would not be God."[92] While software expands our horizons, computer science does not deliver us from the human condition. Following William James, we may affirm that "the trail of the human serpent is...over everything," including algorithms.[93]

To speak in theological terms, digital humanities does not promise a new 'natural theology.' Digital humanists aspire to understand their disciplines better, not to evaluate their consonance or contradiction with some scientific view of the world. This sets digital humanities in theology apart from the so-called 'religion and science' dialogue. A motivating factor for that dialogue is to discover points of contact between science and religion in a common quest for truth. As I noted at the outset, digital humanities is a humbler affair. While borrowing methods from mathematics and computer science, digital humanists do not seek interpretative keys for the humanities in the sciences. With Updike (and Barth!), we should not expect theologians who take up digital humanities to capture the divine presence in 1s and 0s. But the light that computational tools shed on theological texts should help us become more critical readers, as well as more creative writers, of theology.

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Footnotes

1. Karl Barth, "Gespräch Mit Wuppertaler Studenten (1.7.1968)," in Gespräche 1964-1968, vol. IV, Karl Barth Gesamtausgabe 28 (Zürich: Theologischer Verlag, 1997), 501. ↵
2. See Benjamin P. Murphy, "The Qumran Visualization Project: Prospects for Digital Humanities in Theological Libraries," Theological Librarianship: An Online Journal of the American Theological Library Association 5, no. 2 (May 2012): 29; Ashley Reed, "Digital Humanities and the Study and Teaching of North American Religions," Religion Compass 10, no. 12 (December 2016): 308, doi:10.1111/rec3.12226; Tim Hutchings, "Digital Humanities and the Study of Religion," in Between Humanities and the Digital, ed. Patrik Svensson and David Theo Goldberg (Cambridge: The MIT Press, 2015), 283. ↵
3. E.g., two colleagues and I presented a talk at the Annual Meeting of the American Theological Library Association in 2015 titled "Doing Digital Humanities in Theological Libraries" (see Clifford B.

Anderson, Christopher P. Benda, and Eileen Crawford, "Doing Digital Humanities in Theological Libraries," in American Theological Library Association Summary of Proceedings, vol. 69, 2015, 189–97); Bobby Smiley, associate director of the Divinity School Library at Vanderbilt University, gave a keynote address on digital humanities at the subsequent Annual Meeting in 2016 (see Bobby Smiley, "Theological Librarianship in the Age of Digital Humanities," in American Theological Library Association Summary of Proceedings, vol. 70, 2016, 20–32); a panel titled "Digital Religion - Digital Theology" took place at the 2017 Digital Humanities Conference in Montréal (see Claire Clivaz et al., "Digital Religion – Digital Theology" (Montreal, 2017), https://dh2017.adho.org/abstracts/021/021.pdf). ↵

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8. See, for instance, Friedrich Schleiermacher, Brief Outline of Theology as a Field of Study, ed. Terrence N. Tice, 3rd ed. (Louisville, KY: Westminster John Knox Press, 2011) and Paul Tillich, The System of the Sciences According to Objects and Methods, trans. Paul Wiebe (Lewisburg: Bucknell University Press, 1981). ↵

9. Karl Barth, Evangelical Theology: An Introduction (Grand Rapids: Eerdmans, 1979), 110. ↵

10. See Richard Rorty, Philosophy and the Mirror of Nature (Princeton: Princeton University Press, 2009), 287 et passim. ↵

11. Thomas W. Gillespie, "Growing in the Knowledge of God," The Princeton Seminary Bulletin 17, no. 1 (1996): 6, http://journals.ptsem.edu/id/PSB1996171/dmd004. ↵

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13. See, e.g., the function of "the classic" in David Tracy, The Analogical Imagination: Christian Theology and the Culture of Pluralism (New York: The Crossroad Publishing Company, 1998). ↵

14. Moretti, Distant Reading, 48. ↵

15. Augustine, Confessions, trans. Carolyn Hammond, vol. 2, Loeb Classical Library 27 (Cambridge: Harvard University Press, 2016), Book 8, pp. 408-411. ↵

16. Abraham Kuyper, "Confidentially," in Abraham Kuyper: A Centennial Reader, trans. James D. Bratt (Grand Rapids: Eerdmans, 1998), 45–61. ↩

17. Charlotte Mary Yonge, The Heir of Redclyffe (London: Macmillan, 1895). ↩

18. Kuyper, "Confidentially," 42. ↩

19. Patrick Carr, "Serendipity in the Stacks: Libraries, Information Architecture, and the Problems of Accidental Discovery," College & Research Libraries 76, no. 6 (2015): 834, doi:10.5860/crl.76.6.831. ↩

20. Ibid., 838. ↩

21. A. Kuyper, Confidentie: Schrijven Aan Den Weled. Heer J. H. Van Der Linden (Amsterdam: Höveker, 1873), 37. ↩

22. Kuyper, "Confidentially," 50. ↩

23. Hutchings, "Digital Humanities and the Study of Religion," 288. ↩

24. Stanley Fish, "The Digital Humanities and the Transcending of Mortality," The New York Times, January 2012, https://opinionator.blogs.nytimes.com/2012/01/09/the-digital-humanities-and-the-transcending-of-mortality/. ↩

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26. Describing one's experience while reading a corpus has become a genre of its own, e.g. reading the entire Encyclopedia Brittanica (A. J. Jacobs, The Know-It-All: One Man's Humble Quest to Become the Smartest Person in the World (New York: Simon & Schuster, 2004)) or the 51-volume Harvard Classics (Christopher Beha, The Whole Five Feet: What the Great Books Taught Me About Life, Death, and Pretty Much Everthing Else (New York: Grove Press, 2010)). Such books mix personal anecdote with factual content, resulting in idiosyncratic narratives of the experience of reading. ↩

27. Edward Slingerland et al., "The Distant Reading of Religious Texts: A 'Big Data' Approach to Mind-Body Concepts in Early China," Journal of the American Academy of Religion, 2017, doi:10.1093/jaarel/lfw090 ↩

28. Ibid., 4. ↩

29. Ibid., 24f. ↩

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31. Ibid., 315. ↩

32. Christopher Scott Bailey and Eric Rochester, "Testing the Doctrine of Election: A Computational Approach to Karl Barth's Church Dogmatics" (Kraków: Alliance of Digital Humanities Organizations, 2016), 428–30, http://dh2016.adho.org/abstracts/411. ↩

33. See http://paralipomena.com/details/ ↩

34. See Aaron Doenges, "Scriptural Focal Points in Hymns that Reference the Book of Job," https://prezi.com/g40ov0vzyksr/scriptural-focal-points-in-hymns-that-reference-the-book-of/ for his presentation of the project. ↩

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36. Mullen, America's Public Bible, 2016 ↩

37. See Carol Antablin Miles, "A Canon Within the Canon?: No: Proclaim the Whole Counsel of God," Word & World 26, no. 4 (2006): 437 and Michael Rogness, "A Canon Within the Canon?: Yes: Proclaim Christ," Word & World 26, no. 4 (2006): 436. ↩

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