Computer networking, theology, and media ecology

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Abstract:
The media ecology approach to communication research suggests that computer networking, along with any other form of communication, interacts with religion, theology, and every other aspect of culture in the manner of an eco-system. That is, every part affects every other and the introduction of new elements changes established patterns among the older ones. This analytic approach offers insights into how computer networking has affected the practice of theology and into the ways that theology might respond to the newer information management techniques embedded into these newer communication practices.

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In the first decade of the 21st century, a loose Christian community formed around the websites and blogs of several Evangelicals dedicated to a further understanding of the "End Times," particularly as described in the Book of Revelation. The group created a kind of "virtual ekklesia" or church (Howard, 2011). The individual members for the most part had never met offline but found encouragement, support, and teaching in their fellowship, one independent of any congregation or denomination. Made insular by their central belief in the End Times, they nevertheless celebrated their version of Christianity in frequent communication. More than this, the teachings of the most frequent writers created a theological body of texts central to the group's identity.

From early on in the more recent history of the Internet, scholars have distinguished "religion online" from "online religion" (Helland, 2000). The former term refers to the ways that established churches or congregations make, create, or use online resources—posting information about religion (doctrine, belief, organizational structure, services), responding to questions, creating a virtual presence to support their physical presence wherever that may be. The latter, a phenomenon loosely akin to radio or television evangelists' conducting preaching and worship through the media, refers to people's use of the Internet and its affordances to worship together without being physically together, to create religious communities or groups of all kinds, and to participate in religious activities.

The rise of online religion suggests another site for a media ecology of theology. Media ecology approaches communication as a system, borrowing the biological metaphor of an interacting eco-system where every element affects, influences, and is affected and influenced by every other. Just as in the biological system, the introduction of a new element—in this instance,

online communication—will change all the rest. The whole system (the way people employ communication media, the content of the media, the relationship of one medium to another, the affordances of the media themselves, the kinds of thought, the manner of thought and thinking, and so on) changes. The rise of the Internet in the latter part of the 20th century illustrates how the communication eco-system changed and how it changed theology.

The Internet began in a fairly well established communication environment, one marked by both individual (or interpersonal) communication media and practices as well as a variety of mass media and their associated practices. Each medium and its attendant practices not only fostered communication but also functioned as a kind of information management—the shaping of ideas, the storage of thought and information, the access to and sharing (or restriction) of that information, and so on. For example, printed materials fostered fairly concise expression, thoughts presented in ways structured for reading rather than hearing, indexed material, and resources available openly to those who could purchase or borrow the publications. Breaking this down further, each print medium had its own organizational pattern: newspapers with key articles on the first pages, highlighted by headlines whose size indicated the value of the article; magazines with longer articles arranged by topics; academic journals with essays prepared in more or less rigid formats to facilitate the location of information. Similarly, television content followed a set of generic conventions, with different kinds of programming signaling different kinds of thought—commentary, comedy, drama, news. Even the programming schedule marked importance and hierarchy by time of day or interruption for vital news. In short, the

communication world managed relationships, ideas, knowledge, social structures, interaction, business, and even religious reflections.

In that pre-Internet world, personal and interpersonal communication rested on face-to-face interactions, telephony, letter writing, and the postal system. Larger scale interactions—those characteristic of a community, church, city, state—made use of group or mass media. The cultural, religious, or legal systems interacted with these communication systems to protect, limit, or promote discourse. In the United States where the chief media systems took shape over the hundred years previous to the rise of the Internet, newspapers and magazines first came to economic independence and gained the Constitutional protection of free speech, defined in parallel to the interpersonal rights of speech in free assembly. Both appear in the First Amendment together with a guarantee of freedom of religion, whose practice at that time included both assembly and the use of printed materials like the Bible. The Courts later extended the Constitutional protection of speech, the press, and assembly in various degrees to film, radio, and television. As older media, print also had developed business models which in some ways influenced those of the other mass media. As even older phenomena, religious practice, preaching, and theology existed alongside the media and made use of them, usually to support belief or to spread ideas. These formed part of the public sphere, of the communication world, alongside political, economic, cultural, educational, and other expression. In turn, the interpersonal and mass media interacted with these spheres. While not determinative of a given social reality or expressive style, the communication media allowed particular patterns of thought

and expression and, once people adopted them, reinforced those choices.

This communication world, with its rhetorical, legal, and economic structures, had its problems, limitations, and characteristic styles of communication. Although the Constitution guaranteed the right of free expression to all citizens, the press critic A. J. Liebling had trenchantly remarked that the U.S. had freedom of the press "if you were rich enough to own one" (1960, p. 105). Similarly, the other mass media had erected barriers to entry, many based on cost, but some on scarcity of bandwidth (radio, television), others on an editorial gatekeeping process that filtered publication through expert judgment, and others on educational level. In religious discourse or theology, education and ordination placed limits on expression. In this communication environment the right to communicate and the practice of communication more often meant the right to receive (approved) information from established sources. As many critical communication scholars have pointed out, this particular ecology of communication limited thought as much as it promoted it. Educated formally or informally within the system, people literally could not imagine things which fell outside the system.

Theology itself developed a set of practices within this communication environment that in some ways mirrored what had happened with the media. While older methods of theological reflection, like preaching, remained in the churches, these lost credibility as "theology." Churches, universities, and seminaries usually restricted that title to official or doctrinal statements and to work carried on in approved academic fashion—the presentation of papers at conferences and the publication of reviewed articles and books. By the mid-20th century,

theology as a subject matter and as a work of the Christian churches had both expanded and constricted. It had expanded in terms of the specialized topics addressed: biblical theology, systematic theology, pastoral theology, historical theology, feminist theology, liberation theology, the theology of culture, ecumenical theology, and so on—each with particular methodologies for study. But theology had also constricted to the discourse of a highly trained elite who policed themselves and in one way or another submitted to the authority of a religious or denominational body. Theology had become an academic discipline as well as a specialized discourse of the Christian churches. The ordinary reflection on belief—Anselm's faith seeking understanding—no longer seemed "real theology."

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An analysis based on the media ecology model asks what changes when something new enters into a communication system. In this instance, the Internet came into being within the communication eco-system briefly describe above. Envisioned as an incremental improvement, the Internet would link computers to facilitate sharing data, something in the manner of a telephone system (whose networks it initially used). However, the Internet offered other affordances (Ling, 2004, pp. 23-27), that is, it allowed a variety of uses with its flexible design. Individuals and institutions did not need to use these options but could; they could also adapt, adjust, or invent other uses on the Internet structure. In these ways, the Internet was not

deterministic but open. One key flexible factor resulted from how the Internet organized information. Data traveled digitally and computer operators quickly realized that binary storage could represent any kind of information: numeric, textual, visual, acoustic, and so on. All information looks the same to a computer. Computer networks, then, provided not only communication links but also data storage and data processing. With the development of the graphical interfaces of the World Wide Web, non-specialists could easily access complex data. Further, cataloguing and indexing services made information easier to locate. Improvements in processing and transmission made the Internet more convenient. Software developments allowed anyone to prepare and publish online material. Portable devices for accessing the Internet soon made it ubiquitous.

Interestingly, almost every aspect of the Internet existed in some form before the rise of the Internet and the World Wide Web. That is, people did not invent the Internet or its uses from scratch, but they followed where its openness led. As a network communication system, the Internet differs slightly (but significantly) from telegraph and telephone systems: it does not require a dedicated connection but breaks information into packets which reach their destinations through divergent paths, allowing more efficient use of the system. As information storage, the online system resembles the symbolic storage of books and libraries, but with greater capacity and with immediate access. Its indexing and cataloguing found initial models in books and libraries, but included vastly more references, shifted to database management, and later added powerful algorithms to evaluate and rank information. Access via portable devices grew with the

improvement of cellular technologies and with the recognition that, from the perspective of network transmission, voice and data do not differ at all. One could account for much of the Internet's growth in this way. The key development resides not so much in the physical infrastructure but in a new understanding of information—physically, the Internet is an information management system that offers different views of and uses for the information linked to its network structure. As such, it affects and reshapes the entire communication environment.

Just as the Internet itself resembles earlier communication technologies, the impact of the Internet resembles that of earlier developments in communication. Like the printing press (Eisenstein, 1979), the Internet has increased the volume of material available to the public, the speed at which it circulates, and the variety of its content. By removing barriers to material reproduction (as the printing press did by substituting mechanical copying for manual labor) and consequently increasing information storage (as the printing press did in the form of new books), the Internet effectively removes the need to choose which information to publish. Its networked storage has room for everything. Like the printing press, which created new forms for the display of information whether words typographically arranged on a page (Eisenstein, 1983, pp. 63ff; Ong, 1982, pp. 120ff.) or words fashioned into new genres like the essay or academic article and consequent memory systems (Eisenstein, 1979, p. 84; 1983, p. 57; Yates, 1966, p. 131), the Internet's neutrality toward information—typographic, verbal, graphic, aural, visual—has created new forms for presenting information. Like the telegraph, which increased the speed of communication, erased the factor of distance, and transformed communication into digital

information (Standage, 1998), the Internet has extended digital information around the globe. Like the radio, which further removed communication from physical connection through its use of the wireless electromagnetic spectrum, the Internet reaches practically everywhere that a radio signal can go. The Internet (and the social media it supports) also manifest what economists call "network effects." This is, it provides an "explicit benefit" to users who "align [their] behavior with the behavior of others" (Easley & Kleinberg, 2010, p. 509)—the more people who use the network the more valuable it becomes, connecting more people and devices. Ultimately, the impact of the Internet depends not so much on any one particular factor but on the combination of things that leads to a dramatic reinterpretation of information management. Conceptually as well, then, the Internet is an information management system.

In one way or another all communication manages information. Simple conversation exchanges information between people. Storytelling in groups helps to shape information, store it, and pass it along from one generation to another (Ong, 1982; Assmann, 2006). Writing fixes information in symbolic forms and thus more efficiently and more securely stores it. Learning systems like those of classical rhetoric teach as much ways to organize thought and information as ways to present it intelligently and pleasingly. Indeed a significant part of rhetoric (and other educational systems) addresses the need to remember or store information in ways that facilitate recall. Each development in communication technology has led to a new way of storing and accessing knowledge. For example, the index in a book (something not really practical until the advent of printing with its identical pages, Ong, 1982, p. 123-124) presents information as

objects, subject to readily located places on a page. Ong argues that such things result in a new "noetic economy" or way of thinking, citing the post-print growth of science, mathematical logic, dictionaries, and intertextuality, all made easier through newly developed information storage (1982, pp. 130 ff.). Seeing words on a page makes people think differently of words, of communication itself. These become objects rather than activities and, as objects, open to manipulation. Similarly, later developments like film and television extend the information effects of drama and storytelling, making it possible to simulate and manipulate more and more complex situations.

Because it combines so many communication forms into one overarching view of data, the Internet continues the communication processing of information, but in ways not fully apparent yet, given its relative youth. However, research into network effects suggests that distributing information management and storage across a wide system lowers the effective cost of managing that information, increases the amount of information available to each member of the network, and increases the perceived value of that information. Another network effect favors standards, fostering uniformity for data storage and consequently easing the wider use of that data (Easley & Kleinberg, 2010, pp. 509-510). Increasing the availability of data and fostering the ways people think with and about them, this network effect indirectly reshapes how people learn, think, and work. For example, online sites combine text, graphics, animation, images, and sound in approaches that move people away from text-only definitions of knowing. Physics and mathematical education resources combine equations with graphical and photographic

representations of the phenomena they describe, linking the abstract with the concrete. Here and in other disciplines, the whole movement to the purely symbolic representation of knowledge has slowed. Similarly, a subject like ethics now involves case studies, enacted in dramatic portrayals.

Though they could have developed in many different ways, some features of the Internet and the social networking sites available online also lead to specific noetic consequences. The search algorithms of Google, for example, make information retrieval rapid and seemingly comprehensive. Much like the press, as Bernard Cohen (1963) observed, this organized presentation of information "does not tell people what to think, but what to think about"; in addition, the Google's search results may have an even more powerful effect by telling people what information to think with, and teaching them that thought consists of doing things with that information. (Google's algorithms, like data standards, have both positive and negative consequences—not all information exists online nor does all information lend itself to the kinds of storage Google excels at searching. Not all information fits into standard categories. Further, and perhaps more important, not all thought consists of data manipulation.) Similarly, Wikipedia and other online encyclopedias provide "crowd sourced" information, drawing on the expertise of large groups and depending on the self-correcting processes of massive peer review. Such online resources both promote and limit thought, both shape and constrain thinking. Another Internet feature that helps to shape the contemporary noetic economy appears in blogs—personal commentary and narratives, some interactive. Virtually available to anyone with Internet access, blog commentary widens the scope of any discussion, giving a public voice around the world to

people seldom heard. Creating a blog requires no credentials, no licensing, but only access to the Internet and the knowledge to use simple software. On the other hand, the form of a blog seldom fosters sustained argument. Here the communication environment offers wider participation at the risk of less in-depth participation. Finally, and a bit ironically, the social networking structure of the Internet requires no pre-existing community to support communication interaction; instead, it creates an online community (whether permanent or fleeting) from virtual passers-by. As Howard (2011) found in his case studies of the virtual ekklesia of End Times believers, this feature of the Internet gave place for theological discussions not occurring in established churches but also sheltered people from criticism as they moved in and out of these communities.

Other characteristics of the initial noetic economy of the Internet, as noted already, include an expansion of thought beyond verbal argument to include visual images, graphics, video, and drama, together with their characteristic ways of presenting information—both a photograph and a play organize information and have done so for generations. However, the Internet makes more visual information available to more people than any previous communication tool. One could make the same claim about audio information as well. The Internet gives human beings more information to think about, more tools to think with, more approaches to that information, and more ways to organize and recall that information.

Foley (2006) likens the level of participation, the kinds of participation, and the embedded thought through participation in the online world to oral cultures that simultaneously store, share, and shape information in the active processes of storytelling:

> Thus, oral tradition and the Internet share some core characteristics. Neither medium is a static retrieval mechanism for data; each is ever-evolving and brought into being by the performer and computer user. Both are demonstrably kinetic, emergent, creative activities, and both are linked to actual performance (as opposed to being predetermined and fossilized within the covers of a book). Finally, and because of these shared features, oral tradition and the Internet are phenomenologically distinct from our default, prosthetic (because text-modeled) concept of memory. To put it aphoristically, oral tradition and the Internet mimic the way we think. (p. 96)

From a media ecology perspective, the process Foley describes may work in a more circular fashion. Oral tradition and the Internet may mimic the way we think initially—all those borrowings from earlier communication structures mentioned earlier—but they also shape and reinvent the way we think. They redefine information management and the noetic economy in which we live.

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The communication environment, with its information management created by the Internet and networking technologies provides the context for theology today. As part of this larger social world, theology cannot claim immunity to these forces. The changing ecology has several consequences: these touch upon the noetic economy of theology, the participants and

authority of those doing theology, the topics addressed by theology, the approaches to doing theology, and the way that theology might understand its own environment.

Changes resulting from a developing communication environment have happened before to theology, but perhaps not as dramatically. Over 40 years ago, Ong (1969) asked how theology and theologians used communication media. Among other things, he argued that they used them to think and to share information, but more significantly from a noetic perspective, to shape acceptable arguments and to widen their circle of peers. That is, improved communication—and in 1969 Ong had in mind the post, the telephone, television, travel, and book distribution—led to more contact among theologians and to a greater diversity of cultures and ideas entering into theological dialogue. Today, of course, one culture, one methodology, or one understanding no longer defines theology; every local theology (a concept not explicitly reflected upon those 40 years ago) must take into account other local theologies. The world of theology has become richer and more complex due to the increased ease of communication. Theology takes account of global concerns more now than even 20 years ago. People experience the world differently and must reflect theologically in a different fashion in this Internet age.

People also express themselves differently: the essay, which emerged after years of familiarity with printing technologies, represents only one form for theology today. Ong (1969) argued that the essay freed theology from the polemic and dogmatism of an earlier age in theology; now, the possibilities of the Internet offer new freedom for expression. While academic theology will not disappear, it increasingly shares the stage with narrative theologies, visual

theologies, musical theologies, multimedia theologies, and every other kind of "faith seeking understanding" available online. This noetic shift, a result of the information management fostered by online resources described above, leads to a broader consciousness of method, perhaps more fragmented and data-driven thinking, and less long-form argumentation. Commentary—a form present in patristic homilies, oral tradition, and rhetorical culture (Assmann, 2006, p. 74)—has returned to theology in the online world.

Second, because anyone with access to the Internet can enter into online discussions or publish materials, the theological community has become much more open. Anyone who wishes may post on theological topics. In one of the few empirical studies of the people and content of religious blogging, Campbell (2010), sampled 367 Christian bloggers and found that, of those who stated a profession, 34% were pastors and another 28% either mission workers, teachers, or students of theology (p. 259). Put another way, 38% came from outside the established theological communities. Given the nature of the study, Campbell does not review "official" theological sites—the doctrinal webpages of churches; the pages of theological journals, professional associations, or schools; or the webpages with formats other than blogs. While many official theological sources exist—those which somehow authorize (through academic credentials or ordination or through some other approval process) their participants—many other voices also appear online. Some of these offer an ongoing process of "faith seeking understanding," returning theology to its roots, while others, like those Howard (2011) studied, argue for a particular reading of the Scriptures. One key difference that emerges in the online

world is that these are unofficial, unlicensed, or unapproved sites; even if they may work as religious professionals offline, the bloggers and site managers have by and large not sought any church approbation for their online work. The Internet requires none and, as a communication medium appealing to a younger audience, opens theology to groups different from the usual creators and readers of theology.

Campbell (2010) did find a fairly consistent conservatism in the blogs that she reviewed. Developing ideas in an earlier study (Campbell, 2007), she divides the idea of "religious authority" into four types of authority: "religious hierarchy, religious structures, religious ideology, and religious texts" (Campbell, 2010, p. 257). The content analysis of the blogs showed that "bloggers were 12 times more likely to affirm a category of religious authority in their blogs than they were to challenge or speak critically about them" (p. 260). Where bloggers did challenge theological ideas or enter into debates, they tended to take the side of traditional church teachings and oppose newer approaches to theology, such as Feminist theology. This study, which Campbell identifies as consistent with other recent studies (p. 269) indicates that while the Internet has broadened the participation in theology, it has also served to empower traditional religious authorities and traditional theological teachings. Campbell does suggest that some of this may result from the demographics of the blogging population: overwhelmingly male, largely affiliated with the churches, and traditional in their beliefs (pp. 270-271). She also notes that Cheong, Halavais, and Kwon (2008) argue that the blogs tend to take an educational approach, but—more significantly here—also "build alternative frameworks for religious interpretation and

that religious bloggers operate outside the realms of the conventional nuclear church" (Campbell, 2010, p. 272). From this initial evidence, the alternative noetic system fostered by the Internet has only begun to create different approaches to doing theology in the realm of blogs. The Internet has also allowed these online theologians to operate outside of church supervision and to help create an atmosphere of public opinion in the church.

Third, the online world has just begun to affect the topics of theology. Where academic theologians might address specialized topics and provide a wealth of materials, the Christian bloggers take a more limited approach. In the specific area of theology (which Campbell codes as "religious ideology"), she found that the bloggers most frequently address topics such as theological debates, the nature of God, Christian practices, salvation, sacraments, and the nature of the Church (2010, pp. 262-263). Howard's (2011) study of a different online community found a more single-minded focus on the Bible, particularly the Book of Revelation. He noted that this group almost exclusively appealed to the authority of the Bible (as Campbell also found for many of the bloggers) or to a personal revelation. In choosing topics for theological discussion, Howard's group depended more on issues raised by the group and less on a catechism or set of church doctrines. Topics emerge in almost random orders and not arranged by any syllabus—the FAQ [frequently asked questions] has replaced the *Summa* as the guide to theology, something consistent with the information management tools afforded by the Internet.

Fourth, the characteristics of the information management of the online world have affected the approaches people take to theology. In addition to the noetic effects leading to the

practices of commentary already mentioned, online theology exhibits network effects, with more popular sites becoming even more popular, thanks to the ranking algorithms of Google or the cross-posting with other online publishers. Social networking sites like Facebook and microblogging technologies like Twitter encourage people to follow particular online personalities, who become—in the language of older communication research—opinion leaders and gatekeepers, setting the agenda for subsequent discussions. Popular blogging software and Web 2.0 designs encourage responses to online material, with the post and response formats creating a kind of written conversation. These create new theological methods where the reflection on faith takes place in fits and starts, among many people, moving from one concern to another, often responding to current events. Clergy may or may not play a part in people's religious search; online theology may provide people with knowledge and support apart from any organized religious group or, depending on the approach, may lead people to an organized church. Finally, indexed by search engines, online posts and commentaries appear without context and must make sense apart from any particular tradition.

Fifth, the online world and its information management create a pull on traditional theology to better understand its new environment. The characteristics already mentioned should move churches and academics to sustained reflection on several topics, not the least of which is ecclesiology. What does a church or an assembly mean in a world in which location or distance fades into the background, where people join with others based on a virtual connection? For example, does Howard's virtual ekklesia really describe a church? The traditional understanding

of a church rests on proximity, shared memory, shared texts, shared beliefs, shared worship, shared actions—on a particular way of managing the information that defines the group. What happens when people no longer use those information management technologies? A related question would investigate the qualities or characteristics of the church, particularly its authority, its exercise of authority, its understanding of ministry and the person of the minister who has traditionally exercised authority in both the local church and the larger denominational Church. Do Campbell's bloggers take the place of a teaching office? Similarly, the information management techniques growing from the new communication patterns lead to questions about doctrine, belief, and the definition of each. What role does the increased public sphere or public opinion in the church play? Does the noetic economy of the Internet reduce belief to a set of facts? Every summary of faith runs this risk (something which has long tempted the church) but the online world actually promotes this kind of thinking.

Each of these questions addresses a particular area of theology. A much larger question begins with our understanding of human nature. Every anthropological theology begins with human experience and often takes approaches to thinking and epistemology as givens. The Internet and its ubiquity offers an opportunity to ask how much information management defines human thinking and human being. While the question begins in epistemology, it ends in a theology.

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This brief look at the media ecology of the Internet, as applied to the theological work of the Church, argues that the information management techniques and practices afforded by the Internet's communication tools have already begun to, and have the possibility to radically, reshape the practices of theology. Professional theologians and churches have only begun to take these changes into account as they see some traditional approaches to religious reflection decrease and others become obsolescent. The deeper theological need—faith seeking understanding—has not disappeared, but only taken on new forms and new tools.

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