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John Dyer

The People of the Screen:
How Evangelicals Created the Digital Bible and
How It Shaped Their Relationship with Scripture

ABSTRACT

This study traces the creation of screen-based Bibles and examines how they are changing the way readers engage with scripture. This thesis explores the characteristics of evangelicalism that led evangelical technologists to become the primary creators of consumer Bible software, and it argues that these evangelical developers are introducing new ways of interacting with scripture that are reshaping Christian practices.

The findings of this study are based on qualitative and quantitative data collected in focus groups of engineers and managers working for three Bible software companies and "ordinary" Bible readers based in three evangelical churches in the southern United States. These results were analyzed using insights from a theory drawn from science and technology studies known as social construction of technology (SCOT) and an approach within digital religion called the religious social shaping of technology (RSST).

The development of Bible software is traced along a historical schema of four waves: the pre-consumer academic era, the desktop era, the Internet era, and the mobile era. Interviews with employees of Logos Bible Software, Bible Gateway, and YouVersion explore their perspective as producers of Bible software, and their views are characterized by evangelical biblicism and an orientation toward technology that is theorized as Hopeful Entrepreneurial Pragmatism (HEP). This orientation allows them to move seamlessly between their missional identity and the commercial realities of their respective business models.

The evangelical Bible readers in this study have adopted software into their Bible engagement practices, and they demonstrate a sophisticated heuristic for determining which medium to use for a given set of goals and social situations. However, their pragmatic bent often causes them to choose the Nearest Available Bible (NAB), which is often a phone or other screen-based medium. Smartphones are shown to increase the frequency of daily Bible reading, which is highly valued in evangelical culture, but also to decrease comprehension compared to print, suggesting that its effects are complex and multi-faceted.

This study contributes to understanding the role of technology in redefining religious experiences, and it offers a new avenue for examining the ways evangelicals navigate societal change.

The People of the Screen:

How Evangelicals Created the Digital Bible and

How It Shaped Their Relationship with Scripture

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2019

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ACKNOWLEDGEMENTS

This thesis would not have been possible without the insight, kindness, and encouragement of my Ph.D. advisors, Mathew Guest and Pete Phillips. From Durham to San Antonio to Boston, in person and online, they skillfully guided me, showing me how to be a careful and engaged scholar. Dr. Guest’s intimate familiarity with sociology of religion and Dr. Phillips’s enthusiasm for digital religion made this a richer and more enjoyable project.

Several other scholars have offered their help along the way, including Heidi Campbell, Tim Hutchings, Jeff Siker, Ruth Perrin, and the entire team at CODEC. I am also grateful to the Bible software companies, Faithlife, Bible Gateway, and YouVersion, as well as the churches, pseudonymously known as City Bible Church, Petra Community Church, and Hidden Baptist Church, which generously offered their time to make this study possible. The Digital Bible Society and its president, Ken Bitgood, have also been supportive and receptive to the project. I also wish to express a debt of gratitude to myriad online friends and acquaintances who have offered feedback and comments or used elements of projects I have created.

I have also benefited enormously from the support of my employer, Dallas Theological Seminary, especially my supervisor Mark Yarbrough, urging me to find the right Ph.D. program and giving me the space and time to complete it. My colleagues, Josh Winn, Michael Jordan, Mary Nell Pettitt, Sandra Glahn, Raquel Wroten, Nate McKanna, Paige King, Scott Horrell, Michael Svigel, Glenn Kreider, Dorian Coover-Cox, and many others were of great encouragement.

Friends within my faith community have also been supportive of me and my family as my wife and I pursued doctoral programs at the same time. I think particularly of my long-time friends Dave Furman and Frank Barnett, who have offered decades of wisdom and good humor. We are also grateful to Andy and Miranda Byers for making our transition to Durham

a delightful adventure, and to Nick and Tina Bucknall for showing us the fullness of British hospitality. Both of our families cheered us on, including Amber's parents Bennie and Jeanie Hobbs and her sister and Ryanne. I credit much of my life's trajectory, including this thesis, to my parents who introduced me to the scriptures at a young age. My mother, Corene Dyer, nurtured my faith and creativity during my formative years, and my father, Morgan Dyer, stoked my interest in technology. I am grateful to them for this and so much more. My life would also be nearly unrecognizable without the experiences I share with my siblings, Ruthie Kested, David Dyer, and Stephen Dyer.

Finally, the family I have made with the recently minted Dr. Amber Dyer, and our two children Benjamin and Rebecca Dyer, is the joy and highlight of my life. I am grateful for the patience my children have offered while both of their parents traipsed across the world pursuing doctorates. Their curiosity, wit, and spark have made me a better thinker and person. To my wife Amber, thank you for being a brilliant scholar in your field, a lovely mother and wife in our home, and an irreplaceable friend in my life.

DEDICATION

This thesis is dedicated to my wife, Amber Dyer, our two children, Benjamin and Rebecca, and to the coming generation who will never know a Bible without a screen.

CHAPTER 1:

INTRODUCTION

A New Kind of Technology Company

In the summer of 1979, just a few years after Jimmy Carter brought the term "born again" into the mainstream American lexicon[1] and as Steve Jobs was making the computer a part of everyday life, two engineers at Intel hatched a plan to create a new kind of technology business. Kent Ochel and Bert Brown's new endeavor would combine their religious faith and their lifelong desire to build their own company, enabling them to do something unprecedented—they would bring the Bible into the digital age and put it on every personal computer in the world. Early the next year in Austin, Texas, at the crossroads of the American Bible Belt and the burgeoning computer industry, they created Bible Research Systems (BRS) and set to work merging their technical know-how and biblical knowledge. In January 1982, they released the first version of The Word Processor for the Apple IIe, making it "the first commercial Bible study software on the market" (Gustin, 2005; Hughes, 1987, p. 346; Lubeck, 1984, p. 202). *Softalk Mag* hailed it for including a complete and searchable text of the King James Bible, promising it would "aid the serious Bible student" and comparing Ochel and Brown's accomplishments to Gutenberg's printing press (D. Hunter, 1982, p. 256).

As the personal computer industry and Bible software market grew alongside one another in the 1980s, scholars and religious people alike began to wonder if computers might fundamentally change religion, and more specifically, how the shift from printed books to electronic media would transform the practices of Christians who for centuries had been

[1] Carter's presidential run led several publications to follow George Gallup in declaring 1976 the "year of the evangelical" (Kellstedt, Green, Guth, & Smidt, 1994; Kucharsky, 1976; Meacham, 2006).

called, “the people of the book.”[2] Christianity has undergone two previous media shifts: the first, from the scroll to the codex in the first century, which some scholars have argued became an identity marker for early Christians that distinguished them from Jews and pagans,[3] and the second, from the handwritten codex to the printing press in the fifteen century, which Eisenstein has argued was instrumental in the spurring many of the large-scale cultural changes in Europe including the Scientific Revolution and the Protestant Reformation (Eisenstein, 1979, pp. 163-452). Bibb emphasizes the importance of a third shift currently underway, writing that “the current shift from *codex* to *screen* will be every bit as decisive as the historic shift from *scroll* to *codex* in the Greco-Roman world, or the shift from hand-lettered to printed manuscripts in the Late Middle Ages” (Bibb, 2017). And Weaver has claimed that “[t]he ongoing shift of the Bible from print to digital media is the primary story of historical development in the twentieth century” (Weaver, 2017a, p. 149). If computers and the Internet are enabling similarly spectacular social change in the present, will the shift from the printed Bible to the digital Bible, as *Softtalk Mag* suggests, cause Christianity to undergo another Reformation of sorts?

This thesis initially set out to address a smaller question within this much grander one. Rather than looking at technological change at the scale of an entire religion, the goal was to examine the actors behind the industry, investigating the role of Bible software programmers in shaping the Bible reading of a new generation of digital believers. Instead of attributing personhood and agency to technology through questions like “Is Google Making Us Stupid?” (Carr, 2008) or “Is YouVersion Making Us Heretics?” the project would take a social shaping

[2] Jeffrey (1996, p. xi) and others mention the possibility that “people of the book” was first coined by Muhammed, the Prophet of Islam, in the Quran.

[3] Roberts, Skeat, and Gamble offered several proposals for why Christians chose to use the codex before it was socially acceptable for important literature (Gamble, 1995; C. H. Roberts, 1954; C. H. Roberts & Skeat, 1987; Skeat, 1994).

of technology approach by looking at the ecosystem of digital Bible companies and their customers and examining how they mutually informed and built on one another.[4]

However, as the initial research portion of this project began, it soon became apparent that of all Christian traditions, evangelicals stand apart for their involvement in both the production and consumption of digital Bibles. In fact, as this project will show, after the initial wave of Bible programming experiments in the 1950s and 1960s, nearly all the major companies and ministries involved in the creation of digital Bibles—beginning with academic software in the 1970s, and continuing through the personal computing era of the 1980s, the launch of the Internet in the 1990s, and the mobile era of the 2000s—have roots in evangelicalism. In addition, the churches and individuals most likely to incorporate digital Bibles into their faith are evangelicals. Muslims, Hindus, and other religious groups create applications for their followers, and non-evangelical Christians have created Bible software, but the most commercially successful desktop applications, the most highly trafficked websites, and the highest ranked mobile Bible apps were all created by evangelical individuals, companies, or ministry organizations. These technological entrepreneurs brought to the digital Bible enterprise a distinctly evangelical outlook on the Bible as an object and as a religious text, and their beliefs about how culture, media, and religion interact were mutually shaped by the move into digital media. In the first full-length book on digital Bibles, Jeffery Siker notes that YouVersion in particular, "is clearly evangelical in scope, and proudly so," (Siker, 2017, p. 93) and he goes on to argue that the app itself promotes evangelical ways of thinking about scripture, its purpose, and the ways one should read it. Similarly, Tim Hutchings (2017b) has argued that evangelical developers who create Bible software have effectively, although unintentionally, employed B.J. Fogg's concept of

[4] Huang and Lu (2009), for example, track the iterative development of an e-commerce website using hygiene-motivation theory. Others have argued that mobile software increases user participation in the development process (Mosemghvdlishvili & Jansz, 2013), which we will see when we approach mobile Bible software.

“persuasive computing” to privilege evangelical readings of the Bible in their applications. YouVersion, he argues, prioritizes daily reading and study patterns that lead to evangelical conclusions about the text. And yet, YouVersion and other Bible apps did not come to exist in a vacuum. Instead, the apps and their creators are themselves shaped by a variety of factors including evangelicalism’s value systems around texts and technology as well as external factors like changes in screen technology, evolving social norms around the ever-present glowing rectangles in our pockets, and the technological values of individual church congregations.

This leads to the primary research question of this project. It began with the more general question of uncovering how Bible software developers shape the religious practices of congregants and narrows in to ask: What characteristics of evangelicalism have enabled it to create the most commercially successful and widely used Bible software? That is, what significance do the evangelical identities of developers and users have in shaping the feedback loop of Bible software creation and usage? What we will find is that while Ochel and Brown may have viewed their plans to combine faith and ministry with business and media as novel, in fact, this impulse has deep roots in the history of the evangelical movement. As Gloege (2015), has shown in his analysis of the origins of Moody Bible Institute in the late nineteenth century evangelicalism can be understood not only as a set of doctrinal beliefs or spiritual attitudes, such as those found in the Bebbington quadrilateral, but as a flexible outlook capable of adapting to economic and technological shifts and which sees a parallel between successful business outcomes and spiritual development. As Shelley wrote in the 1960s, “Evangelical Christianity is not a religious organization. It is not primarily a theological system. It is more a mood, a perspective, an experience” (B. Shelley, 1967, p. 7). At times, this mood takes the form of conservative outlook that fears technology and its

potentially negative moral influence,[5] but other strands of evangelicalism readily employ technology in service of their greater mission, such as Billy Graham who embraced radio and television. I will unpack this farrago of traits in subsequent chapters and argue that this flexibility and pragmatism regarding doctrine, practices, media, and business are the very things that made evangelicals uniquely suited as the pioneers of the digital Bible industry and the primary early users of Bible software. This project will argue that the embrace, and indeed perhaps domination, of both the production and consumption side of digital Bibles by evangelicals offers unique insight into the nature and meaning of the evangelical movement.

For example, the evangelicals in this study, both developers and end users, demonstrate the traditionally recognized emphasis on the importance of the Bible in their worship and personal spirituality. They also extend this with an expectation that regular Bible engagement will lead to spiritual change and pair it with a flexibility and openness about how they accomplish this goal. For the developers, this can be observed in the way they move fluidly between discussing business and technological success[6] alongside spiritual and missionary success. They do not equate the two, but they are comfortable with them being interrelated and intermingled on a parallel trajectory. In addition, while the companies under consideration have different business models and technological emphases, their outlooks on media, ministry, and business tend to share a set of common characteristics. First, they have a *hopeful* outlook, exhibiting a net positive view of technology's potential for Christian ministry and personal growth. Although they are aware of the potentially negative aspects of modern technology such as distracting notifications and skim reading, they tend to believe it is better to be a part of technology development than to retreat from such a significant aspect of modern life. Second, they are highly engaged *entrepreneurs* and savvy business leaders

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[5] This approach to technology is expressed well in the warnings of Brooke (1997).

[6] Depending on the company, this might take the form of sales, downloads, interactions, page views, or other metrics, defined by the technology and business model.

capable of building successful technological and creative systems. Many of the successful Bible software companies were started by people with experience in the technology sector, and the evangelical penchant for integrating not only technology but also cultural trends and business methods served their companies well. Third, they are *pragmatic* in approach, making decisions based more on what "works"—in both moral and business senses—than on any systematic beliefs or direction from an authority. The company leaders seamlessly move between markers of spiritual and financial success, and they are willing to try almost anything as long as they can find data demonstrating its effectiveness. Together, these three traits can be combined into an attitude that we will call Hopeful Entrepreneurial Pragmatism (HEP), a summary of the approach evangelical software companies take toward the digital Bible.

As for the end users of digital Bibles, they bring with them the importance of regularly engaging in devotional and Bible study (Bielo, 2009b; Crapanzano, 2000) activities along with the belief that they are to read the Bible for its capacity to "transform lives."[7] The digital Bible gives them a variety of new means of accomplishing these goals, from personalized reading plans to Bluetooth-enabled audio versions, and the pragmatic flexibility deeply engrained within evangelicalism (HEP) means that they are open to all the options presented to them. They use many different forms of media to access the Bible, including an array of hardware (smartphones, tablets, and computers), software (study apps, memorization apps, audiobooks),[8] and printed books (journaling Bibles, study Bibles, reader's Bibles, etc.).[9] They recognize that some of these are better for accomplishing particular types of Bible engagement (e.g., print for devotional reading, digital media for searches), and yet the

[7] The Canadian Bible Forum's study of Bible usage is emblematic of how evangelical's view Bible engagement (Hiemstra, 2014).
[8] Campbell and her students (Campbell, Altenhofen, Bellar, & Cho, 2014) laid out a framework for religious mobile applications.
[9] Fackler (2004) explored the rise of niche Bible products designed for specific markets beginning in the mid-twentieth century driven by the evangelical publishing industry.

participants in this study admitted that their heuristic for choosing a Bible was often very simple—they chose the Nearest Available Bible (NAB), which, due to the high percentage of smartphone ownership, is often a phone-based Bible app, chosen for its convenience. This adaptable approach to both technology and the Bible then reinforces evangelical ideas about the nature of scripture and the goal of faith. And yet, as we will see, potential problems with screen-based media, such as increased distraction and decreased comprehension rates, at times undercut the perceived gains offered by digital Bible technology.

Positioning the Project

This project draws on several disciplines, the most prominent of which is digital religion, an interdisciplinary subfield of sociology situated between religious studies and media studies. As previously mentioned, the project will also draw on social shaping of technology (SST) approaches, which have themselves been incorporated into digital religion by scholars of the discipline. In addition, this project incorporates insights from explorations of the history and development of evangelicalism from both historical and sociological approaches. In studying evangelicals, the project also derives insight from ordinary theology, a cousin of practical theology or congregational theology which is focused on understanding the beliefs and belief mechanisms of non-clergy over the more theoretical work of academics and church leaders. In this section, I will offer a brief introduction to these areas before looking into the current state of research surrounding the digital Bible more specifically.

Early Approaches to Electronic Technology

Before the development of digital religion as a discipline in the 1990s, scholars outside of religious studies began investigating the role of media and technology in society and developing theoretical approaches to address questions that arose from those inquiries. In the 1960s, Marshall McLuhan developed a set of theories around how media, technology, and

communication influence human society and culture.[10] One of the key concepts in his work that continues to ripple through all subsequent media theory is that media itself should be a subject of study, not merely the content carried by the media. McLuhan went on to popularize the idea that the significance of the printing press was not that it allowed ideas (scripture, novels, pornography, etc.) to be spread more quickly, but that the printing press was itself a powerful idea, one that created a something he called "print culture" (McLuhan, 1962). In the mid-1960s, McLuhan's ideas were so popular that he made multiple television appearances and was covered in everything from the *New Yorker* to *Newsweek* to *Playboy*.[11] Two of his most successful students, Walter Ong and Neil Postman, further developed McLuhan's ideas, turning them into a discipline called "media ecology,"[12] and their ideas were applied to understanding the significance of various Bible media over time (Ridgeway, 2009). Others, such as sociologist and philosopher Jacques Ellul who wrote about the importance, and indeed overwhelming, role of technology in shaping modern society,[13] are sometimes folded into or appropriated by media ecologists. However, in the 1970s, when many of McLuhan's predictions did not appear to be on the horizon, his star began to fade, and, simultaneously, thinkers from other disciplines began to see the need for alternative frameworks with more nuance and methodological heft.

The emerging discipline of philosophy of technology tended to see media ecology as a form of technological determinism that put too much weight on media as the sole driver of societal change, in much the same way that Marx's ideas have been considered economic

[10] These ideas were initially laid out in *Understanding Media* (McLuhan, 1964) and later expanded in other works and by his students.

[11] McBride (2011) called McLuhan, "the most important—and most influential—thinker Canada has ever produced."

[12] For the history, progression, and significance of media ecology as a discipline, see (*Perspectives on Culture, Technology And Communication: The Media Ecology Tradition*, 2005; Strate, 2006).

[13] Ellul's two most important works in this area are *The Technological Society* (1964) and *Propaganda* (1972).

determinism.[14] Writing in the early 1970s, John Fekete criticized McLuhan for not addressing the role humans play in technological development and use, arguing that by "denying that human action is itself responsible for the changes that our socio-cultural world is undergoing and will undergo, McLuhan necessarily denies that a critical attitude is morally significant or practically important" (Fekete, 1973, p. 75). Although statements such as "we shape our tools and thereafter they shape us"[15] indicate that McLuhan's views were somewhat more nuanced than that for which his critics gave him credit,[16] some later media ecologists would embrace the term determinism, but qualify it as a "soft determinism" which sees a greater role for transactional human interaction with technology (Strate, 1999, p. 1). If determinism was at one extreme in approaching technology and society, instrumentalism was considered to be its opposite, emphasizing absolute human agency and that technology is "value free" as Andrew Feenberg (2003), would put it. Feenberg and others argue for the need to develop critical theories that take into account both the value-ladenness of media and the agency of humans.

Social Shaping of Technology

In the 1980s, a new approach called the social shaping of technology (SST) [17] emerged out of science and technology studies (STS) as another counter-response to technological determinism. Technological determinism was seen as arguing that certain paths of technological innovation were inevitable, and therefore, their effects on society were outside of human control (Edge, 1988). SST advocates hoped to offer a fresh and more balanced means of interrogating the new wave of computer, medical, and weapons technologies that were being developed. SST approaches emphasize human and social agency and recognize

[14] For a collection of essays exploring questions of technological determinism, see (*Does Technology Drive History? The Dilemma of Technological Determinism*, 1994).

[15] This is a summary of his thought by John Culkin (1967, p. 52). McLuhan himself would deny "inevitability" (McLuhan & Fiore, 1967, p. 25).

[16] Jacobs (2011) offers a helpful assessment of McLuhan, regarding him as both frustrating and necessary reading.

[17] Social shaping of technology was first laid out by MacKenzie and Wajcman's influential 1985 collection (*The social shaping of technology*, 1985).

that different cultures may adopt and adapt to technology in distinct ways depending on their existing value and authority structures.[18] They are more concerned with the organizational, political, economic and cultural factors around the process of innovation than with the social changes brought by technology. Fulk writes that "a constantly evolving set of social structures and technological manifestations arises as groups selectively appropriate features of both technology and the broader social structure in which the group is embedded" (Fulk, 1993, p. 922). In the classic example of the bicycle, Bijker argues that what emerged from its social construction was not the "best" bicycle in an objective sense (i.e., design or efficiency) as if it were Plato's form of "bikeness," but the one that met the needs of the relevant social groups who had a stake in using the bicycle (Bijker, 1995, pp. 18-99).

Similarly, Cockburn and Omrud (1993, pp. 41-74) explore the development of the microwave in terms of gender values, arguing that it was initially conceived of as a masculine technology, but through social use, it was reconstructed as a feminine kitchen appliance. Today, scholars continue to study gendered understandings of technology adoption, such as the way men and women differ in how they hold their phones (Schaposnik & Unwin, 2018). In these cases, scholars from SST and other disciplines argue that technology does not develop "according to an inner technical logic but is instead a social product, patterned by the conditions of its creation and use" (Williams & Edge, 1996, p. 866). Whereas deterministic approaches would look for inevitabilities within the technology itself ("the medium is the message"), SST emphasizes the choices available at each step in the process of innovation and see development as a non-linear garden of forking paths. This approach was developed with the hope of finding stages of development where accountability could be introduced or where change might attempt to be controlled. For example, MacKenzie (1986) and others

[18] Graham and Choi (2016), for example, use social shaping methodologies to explore differences in technology adoption by race and ethnicity.

examined the development of missile guidance systems in hopes of slowing down the spiraling arms race.

Within the larger SST banner reside a number of models including actor-network theory (ANT)[19] and social construction of technology (SCOT). The SCOT approach offers a clear methodology for approaching the development of a technology, and later in the project, I will draw on it as we look at how Bible software evolved. Here we will explore the four components of SCOT that Pinch and Bijker (1987) laid out in their initial model along with later adjustments that came through scholarly engagement. Their first concept is *interpretative flexibility* which states that various groups of people will interpret or assign different meanings to a technological artifact. These interpretations may change over time, such as the automobile which in the 1890s was understood as "green" alternative to the pollution caused by horses in urban environments (McShane, 1997). A second, closely related concept is *relevant social groups* which include both the creators and users of the product as well as any subgroups (e.g., management and programming) or related groups (e.g., reviewers and government regulators). In the case of digitizing a religious text, a SCOT approach would identify users of various religious traditions, each of which might value some modes of interacting with their sacred texts over others. A Muslim group reading the Quran, for example, may interpret a user interface very differently than a Roman Catholic group reading a Bible. And where both of those groups might see the digitization of their sacred text as a boon to their faith, an atheist group might interpret the same digital Bible app as a powerful polemical tool that could be used to strengthen their arguments.[20] Within each of these groups, one might also find interpretive differences between those holding positions

[19] Latour had once been more critical of the ANT model, writing, "There are four things that do not work with actor-network theory; the word actor, the word network, the word theory and the hyphen!" (Latour, 1999, p. 15) and the social construction of technology (SCOT) but later (Latour, 2005) came to appreciate them.

[20] For example, the website http://bibviz.com/ "aspires to be a beautiful and interactive resource for skeptics and believers alike to explore some of the more negative aspects of holy books, such as Bible contradictions, biblical inerrancy and the Bible as a source of morality."

of authority and the layperson within the group. In addition to these different types of end users, the SCOT approach would also identify other groups such as the software company owner whose concerns may go beyond the spiritual into questions of financial viability and commercial success.

A third component of SCOT related to the first two is the *design flexibility* which stresses that the creators of a technology have many choices to make in the creation of their products. There are always multiple ways to construct a tool, and any design one creates is merely a single point in a branching tree of possibilities. In the creation of a Bible app, this process begins when programmers create a user interface which requires them to make choices that favor one function over another. In the case of the digital Bible, these decisions would have significant spiritual import because they would privilege one form of Bible engagement[21] over another. Yet a social shaping approach also recognizes that programmers do not perform their work in isolation; users respond with comments, criticism, and economic choices which form a feedback loop leading to changes in the software and an ongoing cycle of feedback and software iteration. Pinch and Oudshoorn's work emphasizes the many unexpected things users may do with a technology (such as using a Mig engine to put out an oil well fire) and how those innovative uses can become a part of the development process (*How Users Matter: The Co-Construction of Users and Technology*, 2005).

Software developers can take these unexpected uses into account and adjust their products accordingly. At the same time, however, they must balance this against Wirth's concern that "a primary cause of complexity is that software vendors uncritically adopt almost any feature that users want" (Wirth, 1995, p. 65). This leads to the third component of the SCOT framework, *closure and stabilization*, which explains how the design process

[21] The term "Bible engagement" is a general term used to encompass any interaction with the Bible including memorization, study, and *Lectio Divina*. Its use in research and among evangelicals will be explored more below.

eventually settles on a product. Conflicts often arise about how a technology should be built or how it should function, but once all the groups have resolved the conflict, design and interpretive flexibility collapse, and the product reaches a state of closure and achieves stabilization. Pinch and Bijker provided two example mechanisms for closure. First, in rhetorical closure, the creators declare that there is no further problem and no additional changes are necessary. In software terms, this might be "The bug has been fixed," or "The new feature is finished." The second closure mechanism occurs through redefinition when a developer responds to a user's complaint by declaring that it is actually solving a different problem. In the mid-2000s, most mobile phones, including popular models from BlackBerry, had a physical keyboard and many feature buttons. In 2007, Apple released the iPhone which had a larger screen and a single physical button on the front. This brought closure and stabilization by redefining the problem in such a way as to value simplicity over other potential design routes.[22] In the realm of digital Bible apps, Logos Bible Software's mobile applications for iPhone and Android initially displayed text on the screen in the form of pages that the user could swipe right and left which mirrored the navigational metaphor in e-Readers like the Amazon Kindle. Some users offered feedback indicating that they would prefer to have a scrolling interface where they could move up and down fluidly as they could in other products such as YouVersion. Eventually, Logos made this an option in the software and announced it on their blog (Vaniman, 2015) (rhetorical closure) which brought a form of stabilization to their platform by allowing it to support the preferences of multiple user groups. YouVersion, on the other hand, still only displays one chapter at a time which does not allow their users to see the end of one chapter and the beginning of the next chapter at the same time. Rather than changing this, they effectively engaged in a redefinition closure by

[22] Apple has long been noted for its emphasis on simplicity seen in early reviews of its desktop software to more recent design analysis (C. Shelley, 2015; William, 1984, p. 31).

emphasizing other features like reading plans and audio which are connected to a single chapter.

The fourth component of the SCOT approach is the *wider context* which includes the larger sociocultural and political milieu in which the development process takes place. Klein (2002, p. 31) notes that in Pinch and Bijker's original conception of SCOT, this played a smaller role in the process, but has since been expanded through critical work. Edwards, for example, showed how computer technology functioned as a metaphor and political icon during the Cold War era (P. N. Edwards, 1997). For digital Bibles, the wider context expands our vision beyond the dynamic between users and developers, into considering other factors such as the hardware created by other companies on which the software runs. As we will see in future chapters, digital Bible software followed the trajectory of the technology industry from desktop computers to Internet websites to mobile devices. With each of these technological shifts came new ways of interacting with the text as well as expectations and ideas about what might supplement the text. For example, in its initial iteration, the primary innovation of YouVersion website was its user-generated commentary (Hutchings, 2014) which reflected the growth of social media and crowdsourcing websites like Wikipedia (Cheong, 2014; V. Gonzalez, 2011) at the time. This indicates that trends in the secular world can play a major role in the development of the digital sacred. Regarding the context of hardware, Eune and Kang (2012) compared desktop, tablet, and phone screen sizes and concluded that different form factors were better suited to certain forms of Bible engagement than others. Phones, with their smaller screen size, are better suited toward shorter periods of reading, and their constant availability makes them ideally suited for reminders, while desktop computers have more horsepower and screen real estate for studying. In this sense, the wider context can be seen as setting the parameters of design flexibility and influencing closure and stabilization.

While the SCOT approach is helpful as a move away from technological determinism, it is not without its critics. Langdon Winner (1993) proposed that SCOT was too narrowly focused on how technology arises without considering its consequences. This concern is relevant to the present study because we are interested not only in the role of evangelical ideas in the formation of digital Bible technology, but also in the consequences of embedded evangelical values in a Bible app. Winner also argued that SCOT only focuses on the groups who have a role in shaping technology, but not those without a voice who are nevertheless affected by technology. Here again, the millions of Bible app users who do not have a means of offering actionable feedback are nevertheless important subjects in the social shaping of Bible technology. In a related vein, Scheifinger (2017), looking at the practices of Hindus online, has argued for the significance of what he calls “non-participatory digital religion” and shown that examining only the groups most involved in created a technology will overlook the role of other social groups in shaping and being shaped by a technology. Other scholars criticized SST in a more general sense for its “excessive emphasis on agency and neglect of structure” (H. Klein & Kleinman, 2002, p. 30). By “structure,” Klein is referring not to the tool itself (i.e., a Bible app), but the social structure in place around a technology ranging from how consumers access and buy technology to the value systems of a culture which shape how individuals and communities adopt and negotiate technology. In addition to the structures that frame the agency of the development team, another key concern not addressed directly by SCOT is how the technological product constructs a context which imposes a boundary around what is possible for the user. In the case of a Bible app, the features and interface structure the kinds of engagement that is possible. As consumers, users are free to choose from different Bible apps, but once inside the app, they are only free to do what the developers have created and prioritized.

These critiques led scholars in the field to expand on the original four components, including Bijker himself who added a fifth component to his original SCOT proposal which he called the *technological frame* or the "frame with respect to technology" (Bijker, 1995, p. 126). This component attempts to address criticisms of early versions of SCOT which said that its approach to groups was too simplistic and did not account for existing beliefs, theories, prejudices, taboos, and other structural considerations that would tend to promote some technological innovations and discourage others. The technological frame is related to the concept of the wider context, but it focuses on what emerges from within a group and in the social structures between groups. This includes the ways both technology creators and users are positioned toward the social, political, and economic forces around them, and in the realm of religious belief, it also includes the authority structures, tradition, and beliefs of a particular group which shapes how it negotiates and adopts new technology. As we will see below, some Christian traditions have been resistant to adopt certain technologies such as digital Bibles in a worship service, while others, such as evangelicals, demonstrate a technological frame that is much more open toward embracing new media in their personal and corporate religious practices. While SST approaches like SCOT offer helpful methodological guidance for understanding digital Bibles, the concept of the technological frame points to the need for a more specific and nuanced approach to the development and adoption of technology within religious contexts. We find this approach in the area of digital religion and in scholars like Heidi Campbell, who have proposed a religious social shaping of technology. In addition, the SCOT approach is useful for analyzing the formation of a technology, but the traditional tools of sociology for fieldwork will be necessary to investigate the impact of the technology once it has been formed.

Digital Religion

The above sketch has explored the ways that scholars from various disciplines have examined the relationship between media and culture, and we now turn to the more specific study of media and religion. In the 1950s, publishers began using computers to work with biblical texts to generate Bible indexes (see chapter four), but these early efforts garnered little attention from religious studies scholars. However, in the 1980s as the personal computer spread and early network pioneers dialed into bulletin boards and database services, they quickly moved beyond technical discussions and began to interact around other aspects of their identity including their religious practices and debates.[23] By 1990s, scholars began to use terms like "cyber-religion" to describe the practices of faith that began to emerge on these network-connected computers. Some scholars like Dawson used the term cyber-religion exclusively to describe "those religious organizations or groups which only exist in cyberspace" (L. Dawson, 2000, p. 29), while others like Brasher defined it more broadly as "the presence of religious organization and religious activities in cyberspace" (Brasher, 2001, p. 9). In the mid-1990s, the final restrictions on commercial Internet traffic were lifted, and more traditional religions began to find their way online, and by the mid-2000s, the concepts around "cyber-religion" reached an endpoint, and the subfield of "digital religion" emerged as a distinct academic discipline.

Since its origin in the 1990s, digital religion has developed and matured from a largely descriptive and speculative exercise toward a more theoretically robust and grounded approach. Højsgaard and Warburg used the metaphor of waves to describe a consecutive and overlapping series of approaches to studying religion and the Internet. They argued that the first wave tended to focus on (and speculate about) the new and extraordinary possibilities of

[23] Rheingold (1993) documented the early use of bulletin board systems (BBS) for religious discourse, including a "create your own religion" thread in chapter two of his book.

the online world, the second wave became more realistic in its framing and categorization of what was happening, and the third wave introduced new theoretical and interpretive frameworks (Højsgaard & Warburg, 2005, pp. 1-12). A decade later, Campbell and Altenhofen (2016) would label these first three waves "the descriptive," "the categorical," and the "theoretical." They added fourth wave, the "integrated/convergent" to which they sought to contribute. My work is also positioned within this multi-disciplinary, integrated/convergent way of understanding technology and religion, and because each wave draws on and learns from the previous waves, it is helpful to recount their development and maturation.

Some of the first published writings considering religion and the Internet came from journalists, including Erik Davis's 1995 "Technopagans" essay in *Wired* (E. Davis, 1995) and Joshua Cooper Ramo's 1996 exploration called "Finding God on the Web" in *Time* (Ramo, 1996). While Davis focused on how pagan rituals and experiences were being transferred and in some cases reborn on online, Ramo reported on how members of traditional religions were using the Internet, ranging from Benedictine monks with websites to information about religions less common in the United States such as Jainism. Both spoke of how the web would change religion and people, religious and non-religious alike, but neither could yet offer analysis or categorization. At a time when Google was still a research project, Mark Kellner offered one such categorization with his book *God on the Internet* (Kellner, 1996, p. 242) which cataloged and indexed all the religious websites Kellner could find. At this stage, religion on the web was in a nascent and evolving stage, and because of this, these and other authors tended to focus on reporting what was happening and offering guidance on how to join the movement, but their work did not provide much in the way of reflective analysis.

Religious scholars were not far behind, offering more comprehensive descriptions and surfacing questions about what might happen as the Internet adoption increased. Stephen

O'Leary wrote one of the first such accounts, drawing on the work of media ecology and communication theory including the work of Ong in order to "speculate on the transformation of religious beliefs and practices as these are mediated by new technologies" (O'Leary, 1996, p. 782). O'Leary continued his Ongian analysis of online religion with Brenda Brasher, analyzing the ways in which online "speech" functioned and the place of online religious texts, including the Bible, in those acts (O'Leary & Brasher, 1996, p. 251). Although such initial works fall under the "descriptive" wave, O'Leary began to lay the groundwork for future categorical and theoretical work when he explored the methodological issues of what he called "virtual ethnography," attempting to observe religious rituals primarily through records of text-based interactions. Other scholars began to ask questions about how the Bible might change as it moved from paper to pixels and how those changes might affect authority, canonicity, and the understanding of the Bible as an image or "artifact with symbolic freight" (Mullins, 1996, p. 38). Theologian Tom Beaudoin, writing as the Internet was reaching mainstream adoption, wondered if the free interconnected flow of information on the Internet would make it impossible to maintain a fixed Biblical text or an authoritative interpretation. He argued that "Reading the scriptures has always been hyper-textual; cyberspace just helps us see that more clearly and might give us new options for interpretation" (Beaudoin, 1998, p. 127). Some bloggers have, in fact, called for the ability to "build your own Bible," (Neaveill, 2009) and study-oriented applications encourage users to click through to additional resources as Beaudoin suggested. However, all of the major Bible applications still include a fixed, canonical version of the biblical text, and none include the ability to reorder the canon or edit the text of the biblical books. Looking back at his predictions about how the biblical text would change, it appears that Beaudoin may have been operating with a somewhat deterministic mindset, assuming that the possibilities and priorities inherent in the technology might overwhelm what the users wanted from a religious text. But social shaping

approaches to technology would suggest that even when a technology can do something (edit the canon), this pathway is not inevitably determined if the relevant social groups (in SCOT terms) do not desire the feature or if they interpret it as negative. In the case of digital Bibles, the primary or dominant group has been evangelicalism, and therefore, one might expect that its design flexibility would be governed by its conservative understandings of scripture and canon. If a user from another religious tradition suggested a heavily redacted Bible such as the one created by Thomas Jefferson (Jefferson, Rubenstein, Smith, & Ellis, 2011), an evangelical Bible developer might respond with rhetorical closure saying, "The canon is a feature, not a bug."

Another example that typifies the speculation of the first wave of digital religion came in a 1996 essay on spirituality and technology, where Bauwens (1996) documented uses of technology by various religions and spoke of a coming "convergence of technology and spirituality". Reflecting on these works, Højsgaard and Warburg predicted that such "far-reaching consequences predicted in the first wave will probably not come true" (Højsgaard & Warburg, 2005, p. 2) and noted that in the second wave of digital religion research, scholars became more nuanced in their approaches, assuming less about technology and spending more time categorizing and attempting to understand the unique approaches to faith and media held by religious groups. While the first wave tended toward either utopian idealism or dystopian anxiety, this second wave was "more reflexive and less unrealistic" (Højsgaard & Warburg, 2005, p. 5).

Haddon and Cowan's edited volume (*Religion on the Internet: Research Promises and Prospects,* 2000) was one of the first works to introduce systematic thinking about religion and the Internet with authors offering an array of new methodological approaches and example analysis. Hellend's (2000) essay arguing for a distinction between "online religion" and "religion online" was particularly influential. He used the term "religion online" to

describe the ways in which traditional religious hierarchical structures were utilizing the Internet as a tool to further their aims. He argued that these organizations tended to present non-interactive information in a top-down vertical manner that preserved existing authority, control, and status. In contrast to this, Hellend used the term "online religion" to describe what he saw as a new form of religious praxis that reflected "the configuration of the Internet medium itself" (Helland, 2000, p. 207). He saw the Internet as inherently non-hierarchical and argued that its nature as open-ended allowed these new forms to emerge in a "bottom up" (Helland, 2000, p. 214) manner. While "religion online" tended to consist of non-interactive information provided by an official source, "online religion" was user generated and interactive with non-clergy responding to one another and sometimes engaging in new practices online. For example, users discussing the beliefs on a message board or writing prayers to one another without the oversight of traditional legitimizing structures and official gatekeepers would be interactive "online religion." In contrast, an informative website built by the Mormon Church or a catalog of papal encyclicals from the Roman Catholic church would be better described as "religion online." A related typology came from Cowan who suggested applying the terms "open source" and "closed source" from the programming word to religious practices. Just as closed source programming is controlled by the developer, and end users have no input or rights to change it, closed source religion describes hierarchical religious organizations that do not tend to incorporate parishioners ideas into official dogma. In contrast, anyone can use or contribute to open source software, and Cowan suggested that open source religions are those that encourage innovation from noninstitutional sources.

Cowan himself pointed out that this distinction, while useful, is unavoidably murky (Cowan, 2004, p. 19). Similarly, scholars pointed out that Hellend's categorization could not be maintained in all cases (Young, 2004), and Hellend himself recognized that the distinctions he made between interactive practices and non-interactive information or

between user-created and clergy-created material could not be entirely maintained with full clarity. For example, he noted that reading a religious text is often understood as being a religious practice, but it is difficult to know if reading that same text online (i.e., a digital Bible) can be cleanly categorized as “online religion” or “religion online” (Helland, 2005, p. 5). Although scholars today, including Helland himself, acknowledge that his two categories are often blurred together,[24] it is still considered a helpful concept for teasing out the nuances between different types of practices and distinct strategies employed by individual users and the religious groups in which they find their identity. Scheifinger argues that in the case of Hinduism, the non-participatory nature of “religion online” in Helland’s typology is a necessary tool for exploring how official religious channels on the Internet can, in turn, shape offline religious practices and perceptions (Scheifinger, 2017, p. 8).

As we explore the digital Bible, Helland’s classifications allow us to distinguish between its creation—by the Christian organizations that generate Bible translations and license it to software developers who in turn create applications that present the authoritatively determined text to users—and the use of digital Bibles for various practices such prayer, devotional reading, and small group interaction. Digital Bibles apps also allow users to highlight and underline verses, add their own interpretive notes, and share their understandings with one another. This means that while the creation of the text itself is still largely a form of top-down authoritative “religion online,” the reading of the text and interaction that the software allows merges into “online religion,” albeit within the walled confines of what the software developers enable.

There are also some open source Bible applications which would appear to be a rather literal application of Cowan’s open source religion, except that they too generally use fixed

[24] One of Campbell’s (2012) primary conclusions about recent research into religion and the Internet is that the distinction between online and offline has itself blurred as users no longer think of themselves as “going online” but instead fluidly move between online and offline context throughout the day.

translations of the Bible and do not include features which would allow users to modify the text. Groups like the American Bible Society and Faith Comes by Hearing have created Application Programming Interfaces (APIs) which allows developers to access and display copyrighted Bibles in their applications and websites, but developers are only granted access if they agree to terms and conditions such as "Don't alter or change the meaning of the Scripture."[25] The closest thing to a genuinely open source Bible that encouraged a form of "online religion" might be a translation like the World English Bible (WEB),[26] which its creator Michael Paul Johnson placed in the public domain to make it freely usable and allow for modification. However, the WEB version does not introduce any new ideas or forms of religious practice other than its freedom of use, especially in electronic formats. Perhaps the most high-profile Bible version with user-generated modifications is the Queen James Bible which uses the King James Version as its base and modifies eight passages "in a way that makes homophobic interpretations impossible."[27] As one might expect, it was praised by some outlets (Bluemke, 2012) while more conservative websites objected to the changes (Carter, 2012; Infantine, 2012). Another potential example of an app that subverts traditional religious authority structures is the Our Bible App which was released in 2018 and whose "goal is to untangle the binds that Christian colonizers have spread across the globe over hundreds of years" through "devotionals highlighting pro LGBT, pro-women and [encouraging] interfaith inclusivity."[28] However, while the Queen James serves as a potential example of digital technology enabling the creation and distribution of a remixed Biblical text and Our Bible App shows that apps are being created to serve those outside the majority,

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[25] The American Bible Society API. (n.d.). Retrieved June 26, 2017, from http://bibles.org/pages/api

[26] The World English Bible is available from ebible.org, and was derived from the American Standard Version (1901).

[27] The Queen James Bible website, www.queenjamesbible.com currently redirects to an Amazon.com page selling the printed version of the text. The quoted sentence comes from the original website. Queen James Bible. (Queen James Bible, 2013). Retrieved from https://web.archive.org/web/20130323065103/http://queenjamesbible.com/.

[28] Our Bible App Mission. (2018). Retrieved September 8, 2018, from https://www.ourbibleapp.com/mission/.

neither the QJV nor any other user-modified versions have appeared in any major digital Bible applications, and even the Our Bible App only contains recognized translations. This suggests that traditional religious authority structures are still very much in operation circumscribing what constitutes "the Bible" in print and in digital forms. In these examples, "religion online" still appears to override "online religion."

Højsgaard and Warburg suggested that, as they were writing in the mid-2000s, a third wave of research was emerging that was moving from categorizations which proved to be limited toward more nuanced theoretical and interpretive approaches which incorporated theories from other fields into a diverse "bricolage." For example, as Fischer-Nielsen (2012) examined how pastors engage controversy on the Internet, he utilized developments in the history of secularization theory to draw out new implications for the practices of religion in digital spaces. Scholarship in this wave also recognized that the Internet was becoming a part of everyday life and the distinctions between online and offline practices began to dissolve as users moved fluidly between the two. Scholars also began to refine the techniques of ethnography, including Hine (2000, pp. 63-65) who proposed viewing the Internet as both a culture and as a cultural artifact with unique challenges because of its lack of a physical location and tangible objects. Similarly, Kozinets (2010, p. 41ff) coined the term "Netnography" and outlined new approaches developed to study online communities after the advent of social media.

In the mid-2000s, modern smartphones like the iPhone had not yet been released or adopted widely, but Internet adoption was high, and scholars began to look in more detail at the way this fluidity affected previously explored ideas like community, authority, and ritual. In the area of community, some scholars like Dawson (2005). questioned the efficacy of online "pseudocommunities" while expressing skepticism about romanticized images of offline communities, arguing that more research was needed to see if online communities

could truly produce meaning. Hutchings (2017a), on the other hand, offered a rich and detailed exploration of how online churches approached questions of community and authority and how they understood the relationship between the digital and everyday life, and Campbell further explored the ways in which the Internet as a social network was also enabling it to be a spiritual network for some religious people (Campbell, 2005). In the area of shifting authority, scholars explored how the Internet could allow for new religious authorities to emerge and challenge existing structures (Campbell, 2007; Campbell & Golan, 2011), and how it could simultaneously enable existing religious leaders to further exert their influence, in cases such as ultra-Orthodox Jewish communities online (Barzilai-Nahon & Barzilai, 2005), Muslim podcasts (Scholz, Selge, Stille, & Zimmermann, 2008), Buddhist web discussion boards (Busch, 2011), and Roman Catholic forums popular in Poland (Kolodziejska & Arat, 2016).

These questions of authority are of particular interest related to evangelicals who often see themselves as rejecting religious structures and traditions in favor of making the Bible itself their ultimate authority, all the while using Bible and religious study aids, both offline and online, created by religious leaders within the evangelical umbrella. Many American evangelicals worship in non-denominational churches or interact with parachurch organizations, neither of which have the kind of outwardly visible hierarchical ecclesiological structure found in Roman Catholicism, Protestant denominations, or other religions like Islam or Judaism. And yet, while the authority structures are formally decentralized in evangelicalism, we will see that the development of digital Bible software has taken place within a tightly woven network of evangelical institutions, ministries, churches, and businesses. Some of these churches and ministries grow so large that they function with the

power and influence of a denomination in a previous era.[29] This may explain why digital Bibles are not sources of canon remixing as some early scholars suggested.

This leads us to Campbell's proposed fourth wave of digital Bible research as well as her religious social shaping of technology model which attempts to apply the social shaping of technology models discussed above to the study of digital religion. This fourth wave begins in the 2010s as smartphones became more common and the Internet became more embedded in everyday life, including social interactions on social media, economic transactions through online shopping, and work-related tasks through telecommuting. Scholars argued that a hard distinction between online and offline could no longer be maintained, and instead they began examining the relationship between the two and how the boundaries and interactions in one mapped to and informed the other. In this fourth wave, Campbell and Lövheim presented new typologies for categorization and interpretation, and they stress the need to "push for reflection on the social and institutional aspects of practicing religion online" (Campbell & Lövheim, 2011, p. 1092), which seems to parallel the later additions to social shaping and construction models. These methods continue to be developed in edited volumes such as (*Digital Methodologies in the Sociology of Religion*, 2015) which includes a chapter by Hutchings (2015c) laying several approaches to studying religious apps such as surveys and interviews, some of which will be employed in this study.

Campbell's religious social shaping of technology (RSST) offers an additional layer of analysis for technology and religion. Although she and others continue to refine the model to fit within other areas of study (Campbell, 2016, 2017; Lövheim & Campbell, 2017), the core approach includes recognizing that religious groups rarely fully embrace or fully reject new media, but instead undergo a series of dialectical processes in which a group's beliefs,

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[29] Although focusing on Charismatic-Pentecostal churches which are somewhat outside those discussed here, Christerson and Flory's (2017) work highlights how independent churches with loose connections are growing while churches with traditional structures are in decline.

identity, and structure influence how they negotiate the adoption of the technology. Campbell's RSST proposal includes four layers of investigation: (1) history and tradition: the ideas about community, authority, and previous media that might inform how they understand new technology; (2) core beliefs: the key religious and social values or dogmas that undergird the practices of a community and shape their responses to new things; (3) negotiation processes: when the tradition and beliefs are understood, one can consider how the community responds to the new technology including what it accepts and what it might choose to modify or reject; (4) communal framing: how community leaders and members talk about the new media through official and causal channels (Campbell, 2010, pp. 60-62). Some of the examples Campbell gives in her book have strong authority structures, such as Amish, Ultra-Orthodox Jews, and Muslims, where the negotiation is ultimately realized by a few powerful individuals within the community. However, she also considers Christian use of the Internet more generally where decisions are not dictated by a small leadership team, but transmitted more broadly. Evangelicals, Campbell argues, are a prime example of a religious tradition with an "accept and appropriate" outlook toward technology, especially toward those tools which can complement its values: "From the printing press onwards using media technology to facilitate mass evangelization has been a marker of evangelical spirituality and practice" (Campbell, 2010, 114). Campbell and her collaborators (Lövheim & Campbell, 2017; Tsuria, Yadlin-Segal, Vitullo, & Campbell, 2017) analyzed and categorized research methods for digital religion studies, distinguishing between digital environments, tools, and frames. I will deploy the RSST approach more directly in later chapters discussing how evangelical Bible readers understand the significance of the digital Bible and make choices about how, when, and where to adopt it or reject it.

Within the RSST approach, we recognize the importance of studying religious practices and beliefs from below, through the eyes and understanding of ordinary religious people.

Astley has pioneered the study of what he called "ordinary theology," seeing it as emerging out of practical theology into a new multi-disciplinary approach that incorporates social scientific research and theological expertise, focusing on those people "who have received little or no theological education of a scholarly, academic or systematic kind" (Astley, 2002, p. 102). This type of approach led to Ford's (2018) work observing how those outside the church read the Bible, drawing on the Louise Rosenblatt's transactional reading theory on the relationship between the reader and the text as well as Roger's (2013) work observing how those inside the church read the Bible in ways that differ from those with formal academic training. For digital Bible users, this means that their understanding of the Bible, its meaning and usage, will not always be directly connected to the ideas of their highly trained leaders, including those of their local congregation or those with positions higher up in the hierarchy. Instead, we will rely on tools that examine the beliefs and attitudes of ordinary religious people.

The State of the Electronic Bible

In the summer of 2018, YouVersion celebrated the 10th anniversary of the release of its Bible app (Ross Jr., 2018). In the decade since its first release, YouVersion went from a small web-based experiment in user-generated content to being a staple in Apple's list of the Top 50 Free iOS apps (Apple, 2018), making it the most popular Bible app and a fixed part of the religious technological landscape. But this landscape also extends beyond smartphone apps to include desktop Bible study software, Bible websites and tools, and social media where users share scripture with one another. In fact, Barna's *State of the Bible 2019* found that approximately half of all Americans are "Bible users," meaning they engage the Bible in some form at least three to four times a year, and that of those Bible users more than half (55%) use the Internet to access the scriptures, while others use smartphones (56%), apps (44%), audio versions (36%), and podcasts (36%) (American Bible Society, 2019, p. 85).

This means that since 1982 when Ochel and Brown released the first commercial Bible software, digital Bible usage has gone from 0% of all Americans to approximately 28.5%. In this section, I will survey much of the work that has been done to document and understand these trends, highlighting gaps in the research that the present project will attempt to fulfill.

In chapter four, I will argue that digital Bible software development has taken place in four waves. These will be explored in more depth later, but here they will serve as a helpful outline for mapping the available research. In the first wave, (1) the Pre-Consumer Academic Era (1950s-1970s), the only people using computers to interact with the Bible were scholars doing linguistic analysis. This shifted in the second wave, the (2) Desktop Era (1980s), when the first consumer applications were released. These applications, such as ThePerfectWord, Logos Bible Software, Accordance, and PC Study Bible were designed primarily for study and exegesis (Harbin, 1998) and used by pastors, seminarians, and scholars. Some authors released books such as Hughes *Bits, Bytes, and Biblical Studies* (1987) which cataloged how to use a computer for Bible study, and journals published reviews of new software releases, but there were not yet any large studies of users. In the (3) Internet Era (1995 onward), websites like Bible Gateway and new translations like the NET Bible began appearing online, and their presence expanded digital Bible usage beyond the offices of pastors and linguists into the homes of regular Bible readers. This is also the era in which the study of digital religion began to emerge as a distinct discipline where scholars began to consider questions about media and religion broadly and the digital Bible specifically. Finally, in the (4) Mobile Era (2007 onward), marked by the release of the iPhone and YouVersion's Bible app, discussions about the digital Bible entered the mainstream as bloggers debated whether preaching with an iPad "sends an entirely different message to the congregation" (M. Barrett, 2013) than a printed Bible or simply represents a natural transition in the digital age.

Beyond what has already been introduced above, the research into the growth and usage of digital Bibles can be roughly divided into four categories. First, some Bible software companies post summaries of their own analysis of their user's behavior patterns. Second, polling groups like Barna and the American Bible Society have conducted large-scale, longitudinal studies that examine how Americans interact with the Bible in both print and digital media. Third, several scholars have written essays that consider the influence of the digital Bible on overall religious readings, and these studies range across Højsgaard and Warburg's waves, some of which are descriptive and speculative while others categorize and theorize more clearly. Finally, some sociologists of religions have examined smaller sample sizes gathering qualitative and quantitative accounts of digital and print Bible usage as well as interrogating Bible software and the patterns of reading embedded therein. As we survey this growing body of research on the digital Bible, it will become clear that there is very little research on the religious identity of Bible software developers and the ways in which their evangelical leanings influence the development and features of the software.

The largest repository of information on the habits of digital Bible users is probably the information stored on YouVersion's servers that tracks how their users interact with the Bible app. YouVersion publishes some of this information in the form of annual infographics (YouVersion, 2014a) which gives some indication of the amount of interaction the app receives from users. It also releases snapshots on specific holidays (YouVersion, 2015) that indicate the popularity of verses on holidays. Bible Gateway has also published some information about patterns of usage related to cultural events. For example, after the deadliest mass shooting in modern United States history that occurred in Las Vegas in 2017, Bible Gateway and Christianity Today reported a surge in searches for comforting passages such as John 16:33 ("I have told you these things, so that in me you may have peace. In this world you will have trouble. But take heart! I have overcome the world.") and Psalm 34:18 ("The

Lord is close to the brokenhearted and saves those who are crushed in spirit."). They also found similar search spikes during eighteen other violent attacks including Virginia Tech in 2007, Sandy Hook Elementary in 2012, San Bernardino in 2015, and Orlando's Pulse nightclub in 2016. The article pointed out that in addition to searches for terms like "violence," visitors also search for terms related to "end times" (Shellnut, 2017a). Stephen Smith, a developer at Bible Gateway, also posts analyses of data on his personal blog openbible.info including which verses are most popular on social media platforms and what Twitter users are giving up for Lent. These snapshots offer interesting windows into the social patterns enabled by digital Bibles, but they are not able to consider the how users move between their print and digital Bibles or the role developers have in shaping and directing the media habits. The studies also tend to be limited to a particular platform or product, which leads us to consider broader datasets.

The American Bible Society's Annual State of the Bible research (American Bible Society, 2014, 2015, 2016, 2017, 2018, 2019) includes several trends that indicate that the number of Christians who use digital media to access the Bible has been steadily increasing over time, and they are doing so using many different forms of media. For example, their data shows that in the eight years between 2011 and 2019, the number of American Bible readers that used a smartphone to access the Bible grew from less than a fifth (18%) to more than half (56%). This phone usage includes downloading and using apps on phones and tablets, which rose from 35% in 2015 to 44% in 2019, as well as other smartphone usage, including 60% of the users who reported that they "search on the phone" using a mobile web browser instead of a dedicated application. Nearly the same percentage reported "using the Internet" to access the Bible on a variety of other devices including laptops and desktops computers. Approximately one third of Barna's respondents also reported other digital media usage such as "listening to teaching about the Bible via podcast" (36%) and "listening to an audio

version of the Bible" (36%) (American Bible Society, 2019, pp. 84-87). Interestingly, ABS's data also indicates that women are more likely to have installed a Bible app and more likely to use it regularly, while men are more likely to listen to an audio version of the Bible.

In Barna's survey, after asking about different forms of media, they ask about the user's overall preference, "All things considered, in what format do you prefer to use the Bible—print, digital, or audio?" The data show that during the period of increased digital media usages, the percentage of participants who reported a preference for reading the Bible in print has consistently hovered around 90%. The fact that 60% of Bible readers use digital media, but 90% prefer print indicates that there is room to explore the interplay between media and the settings in which one is preferred over the other which I will do in chapters six and seven. This data also indicates that while print is still very important, the category of "digital Bible" is complex and multifaceted, and that the simple comparison of "print vs. digital" does not tell the entire story of Bible engagement. Instead, print and digital should be understood less as a strict dichotomy and more of a broad spectrum of Bible engagement experiences. This includes print and digital products that attempt to minimize distractions such as printed Bibles without verse numbers like the ESV Reader's Edition and apps that attempt to minimize distractions like NeuBible. At the other end of the spectrum are products designed for a more research-oriented approach to the Bible, such as printed Study Bibles and apps with commentaries and original language features. Later, we will hear from congregants who contrast the distractions of their phone with the level of concentration they can achieve with a printed Bible, but we will also hear from people for whom a printed Bible was much too inaccessible and complicated, while a digital Bible on their phone was more intimate and convenient.

Barna also examines general sentiments about the Bible, including why people say they read the Bible and their desire to read it more often. A striking 78% of Americans express a

desire to read the Bible more often, including 20% of those who do not identify as Christians. As for those who recently began reading the Bible more often, more than half (56%) of them say it is part of their "faith journey" while others mentioned difficult life circumstances, significant life change, seeing the Bible change another person's life, or being invited to read it or attend a church with another person. Some evangelical commentators have suggested that this means readers are primary "therapeutically motivated" (Wax, 2018)—recalling Smith and Denton's Moralistic Therapeutic Deism (C. Smith & Denton, 2005, p. 118)—looking not for "truth" but for ideas that will help them enjoy their lives. And yet this desire for change connects with what we will see is one of the primary motivators of Bible software developers, particularly those at YouVersion. In addition, several of the respondents in Barna's surveys attributed their recent increase in Bible reading frequency to downloading a Bible app. However, this number declined from 26% in 2014 to 17% in 2018 (Barna, 2018), suggesting that the novelty of Bible apps may have played an initial role in their behavior. Even so, this is an indicator that evangelical Bible software developers have, just by creating apps, influenced the way Americans engaged with the Bible.

In addition to the work by Barna and the American Bible Society, another helpful large-scale data set is "The Bible in American Life" from the Center for the Study of Religion and American Culture at Indiana University. Results of the initial study were released in 2014 and indicated that 31% of Americans use the Internet to read the Bible, and 22% use e-devices (Goff, Farnsley II, & Thuesen, 2014, p. 31). These numbers are noticeably lower than those in the American Bible Society's State of the Bible 2014, which found that 35% of their respondents used smartphones (American Bible Society, 2014, p. 17). Weaver suggests that this discrepancy may be explained by noting that the American Bible Society's higher numbers are more in line with data from "The Bible in American Life" for those who are fifty-nine or younger (Weaver, 2017b, p. 250). In addition to differences in age, "The Bible

in American Life" also notes that income and educational level influenced the rate of digital media use to read the Bible. Those with higher incomes and those with more education were more likely to use both the Internet and e-devices. Their findings also suggest that women tend to read the Bible more often than men (Goff, Farnsley II, & Thuesen, 2017). This corresponds with Friesen's work examining differences ways men and women approach Bible engagement (Friesen, 2017) and Barna's data indicating that women are more likely to fit into the categories of Bible Friendly and Bible Engaged (Barna, 2017).

The 2014 "The Bible in America Life" study by Goff, Farnsley, and Thuesen formed the introductory chapter of a 2017 book with the same title that includes updated statistics and two more detailed treatments of digital media. In one chapter, Bibb explores features such as parallel Greek and Hebrew versions and the algorithms for Top Bible Verse websites, and though he recognizes that some biblical scholars see these technologies in a negative light, he argues that digital tools have the potential to develop "more sophisticated reading practices" (Bibb, 2017, p. 265). In another chapter, Weaver discussed the results of a survey he conducted on the online discussion boards of Accordance Bible and BibleWorks where he asked questions about their print and digital media usage. From his data, he concluded that "Bible reading in North America is characterized by increasing hybridity of print and digital formats and practices" where digital reading was more conducive to convenience and print reading was reserved for deeper more devotional reading (Weaver, 2017b, p. 255). Another recent work considering the place of the Bible in the US, is the *The Oxford Handbook of the Bible in America* which also includes a chapter from Weaver in which he takes a more skeptical stance toward digital media, arguing that "the moral ambiguity of digital Bibles" (Weaver, 2017a, p. 150) including the distractions and advertisements on phones may do more harm than good. He goes on to express concern that the device on which the Bible resides can function as an idol and as an "uninvited authority" in the life of a Christian.

Other scholars have suggested additional potential downsides to the use of digital media, and one of the most common refrains is that the electronic media has the potential to cause the Bible to “lose its covers.” For example, Wagner has argued that in the age of new media, “The Bible itself has become fluid, its fixed covers dissolving into a host of linked sites that describe competing biblical histories, alternate non-canonical gospels, and previously unavailable literature from the first few centuries of the Common Era” (Wagner, 2011, pp. 22–23) . While some Christians might be worried about this, van Peursen argues that this should not be a concern because it is a return to form. “The Bible started without covers, so why should we worry when it loses them again?” (van Peursen, 2014). As we saw above, Helland’s classification of “online religion” and Cowan’s “open source theology” have suggested such fluid Bibles might become a reality, but so far, no apps have included the ability to modify the canon. Smith, one of Bible Gateway’s evangelical developers wondered if technology might one day allow Christians to read their own “Franken-Bibles” composed of their favorite algorithmically derived wordings (S. Smith, 2013). However, his proof of concept has yet to be implemented on any scale, and this project will show that it is unlikely to occur while the majority of Bible applications are developed by evangelicals who value the canonical form of scripture. Their evangelical identity is important because as Lutheran pastor Trevor Sutton has argued, “Design is never neutral. It is a form of persuasion and communication. Whether digital or analog, a print Bible or a Bible app, designed technologies have an influence on how we think, feel, see, and act” (A. T. Sutton, 2019).

Siker picks up the “concern that the e-Bible becomes a book without covers” (Siker, 2017, p. 65), but his point is not that the canon will literally be changed and remixed, but that the reader’s conceptualization of what a “Bible” is may change. Unlike a print Bible, in a digital Bible it is not as clear that there is a “beginning (Genesis), middle (Psalms), or end (Revelation).” Siker’s argument parallels Hemenway’s work exploring the “bible as

interface," an interface which "enables relationships with users that cannot be reduced to simple consumption of its contents" (Hemenway, 2017, p. 170). Siker's core argument is that the adoption of digital media changes the reader's relationship with the Bible, and he draws on studies about Bible usage like those of Barna above as well as broader studies that compare reading patterns on print and screen. Siker's work is comprehensive, but its broad scope did not consider the evangelical leanings of the Bible software developers he chronicles, nor did the comparisons of print and screen reading include any data directly comparing print and screen reading of the Bible.

Several digital religion researchers have also contributed to the study of the digital Bible, and their observations tend to fall into two main categories: interface analysis comparing software features to print interaction and surveys tracking technology adoption. Under user interface analysis, scholars like Torma and Teusner (2011) observed that some early smartphone based Bible software failed to display the textual notes included in the print version of a digital Bible. They noted that while electronic media enables convenient access to reading and searching, it also lost certain functionality present in print. Other researchers compared specific behaviors such as taking notes in or on a Bible, concluding that at the time, YouVersion's functionality was still not as good as print (O'Neill, 2010).

Some scholars conducted user interface analysis of different kinds of Bible software and suggest that the screen sizes of phone, tablet, and desktop, each lent themselves toward particular forms of Bible engagement (Kang & Eune, 2012). The smartphone, they concluded, was best suited for more regular, but shorter reading, while a desktop was ideal of deeper study of texts and original languages. Additionally, scholars noticed that some Bible software developers began creating new interfaces, designed not just to mimic print metaphors, but also to create new modes of navigation and reading. Martin (2011), for example, noted how the Glo Bible app had pioneered an innovative zooming interface for

navigating through books, chapters, and verses. Some writers praised the potential of digital Bibles for connectivity (Crosby, 2012) and more sophisticated reading practices, while others argued that Bible apps were inferior to printed Bibles for a variety of reasons including their inability to serve as a family focus (Neff, 2012), its fluidity and the dissolution of fixed covers (Kwok, 2008), or the mixed messages pastors would send to congregants by preaching from a tablet rather than a printed Bible (M. Barrett, 2013; Spratling, 2012). Bibb (2017) explored other features of digital media such as how having Bibles in parallel windows on a screen was similar to early printed parallel Bibles, and he also echoed the concerns of those wondering how the concept of canon would change in digital environments, while Phillips (2018) mapped the three waves of digital humanities to the evolution of the digital Bible suggesting future opportunities for the application of AI driven computational analysis.

Beyond these analyses of features and functionality, several more recent studies have asked readers more specific questions about their use of digital Bibles. Richardson and Pardun (2015) conducted an email survey asking participants if they studied or read at home, in church, or while traveling using either a laptop, smartphone, tablet, or E-reader, and they found that participants valued the convenience of portable devices especially when away from home, but also worried about their potential for distraction. This study provided new insight into the locations where readers preferred to use different media. However, it did not differentiate between different modes of Bible engagement such as those outlined by BibleGateway in cooperation with Taylor University's Center for Scripture Engagement (Collins, 2014). Participants in Richardson and Pardun's study also reported that they considered the words of the Bible to be sacred and that its sacredness was better expressed, felt, and passed on in its print form, compared with phones which contain other apps focused on entertainment and communication. Similarly, Rakow (2016) found that many Christians value the materiality of the printed Bible in contrast to the ephemerality of digital Bibles for

print's ability to serve as a repository for memories and as a stable liturgical object. Indeed, a popular evangelical blogger has argued for the superiority of print because "it allows you to leave behind a tangible link to your faith" (Challies, 2018). In another online survey, Hutchings' participants reported a mixture of opinions about digital Bible reading. Many enjoyed the ease of access and constant accessibility and said that they read more frequently because they always had their devices with them. At the same time, Hutchings found that "a significant minority felt their Bible had lost its status as a unique and sacred object" (Hutchings, 2015a). These works point to the way readers move fluidly between print and digital media depending on their goals, priorities, and available media.

In summary, research on the digital Bible began with authors speculating about the possible impact digital Bibles might have Christian spirituality, and over time, more research has been done to document broad patterns of adoption and attitudes toward digital Bibles. However, there is a gap in research considering the social shaping process of Bible software that examines the motives and processes of development teams and connects it with the impact it has on how readers engage the Bible. This work will attempt to fill that gap by unpacking the ways in which the developer's evangelical identities and views of scripture have shaped the process of creating Bible software and how that has, in turn, shaped the reading habits and hermeneutics of everyday readers who use it.

In chapter two, I will explore this project's methodological approach for investigating the two recursively interacting groups in this project, Bible software developers and Bible software users. In chapter three, I will begin exploring evangelicalism itself, unpacking its history, tradition, and core beliefs, as well as its technological frame, in order to understand how evangelicals tend to negotiate business, culture, and technology. In chapter four, I will apply this model of evangelicalism to the emergence of the Bible software industry, showing not only that it has been dominated by evangelicals, but that Bible software as a category has

evolved in response to changes in the wider context of technology. Chapter five will focus on three specific Bible software companies, each representing a major era of Bible software development, drawing on focus group data to explore how the companies conceive of themselves and the goals of their work. Chapter six will pivot toward the users of Bible software and how they make decisions about Bible media and navigate choices based on hardware, software, and the social environment. Building on this portrait, chapter seven will look at specific cases of how some of the modes of Bible engagement they value most—Bible study and daily reading—are being shaped by what the software developers are creating. Finally, chapter eight will offer a summary of the project and its key findings.

CHAPTER 2:

METHODOLOGY, CHURCH AND BIBLE SOFTWARE COMPANY SELECTION

In this chapter, I will explain the process of creating a methodology for this project, discussing investigative strategies that I considered and offering explanations for each choice. As outlined in the introduction, the objective of this thesis is to describe the goals and intentions of Bible software developers and explore how their products may be altering how Christians engage with their sacred text. More specifically, because the developers and the companies behind them have deep roots in evangelicalism, I want to explore how their evangelical identities, including their view of scripture and the relationship between religion and business, have influenced the creation and adoption of Bible software.

The methodological approach for this project can be divided into three distinct, but interrelated parts. In the first portion of the project (chapters three and four), I will draw on the social construction of technology (SCOT) approach by looking at the “relevant social groups,” in this case evangelicals, and their “technological frame.” In chapter three, I will explore what Campbell’s religious social shaping of technology (RSST) approaches calls the “history and tradition” and “core beliefs” of evangelicals including their emphasis on the Bible as well as their pragmatic and entrepreneurial spirit, both of which inform their “negotiation process.” Then, in chapter four, I will outline the history of Bible software, showing how these characteristics of evangelicalism led evangelicals to dominate the field of digital Bible software development and imbue their software with evangelical ways of understanding and interacting with the Bible. Following this background exploration, the second and third phases of the project will incorporate field research with programmers and users. The work with programmers in chapter five will be largely qualitative, in which I will

conduct focus group style interviews with several Bible software development companies with the objective of uncovering the way that they talk about the Bible itself, the way that they understand various forms of scripture engagement, and the methods they use to encourage certain patterns of engagement. In the third phase of research, I will focus on user side of the social shaping process, using a series of qualitative and quantitative instruments designed examine how digital Bible usage among a group of American evangelical Christians may have altered their engagement with scripture. The remainder of the chapter will focus on the methodology of the qualitative and quantitative portions of the project. Before outlining these tools in more depth, I will offer some reflections on my relational, religious, and occupational connections to the overall area of study and the people I am examining.

Reflexive Notes on Evangelicalism and Bible Software

My religious upbringing has primarily taken place within the broad and somewhat amorphous culture of American evangelicalism. During my youth, my parents took our family to several churches within the Baptist and Evangelical Free[1] denominations along with several non-denominational churches with words like “Bible,” “Fellowship,” and “Community” in their names. In addition, I briefly served as a youth pastor for a non-denominational Bible church, which led me to attend an evangelical seminary for my master’s work. With this background in mind, I have attempted to be aware of where these experiences might have created biases that could misdirect my research approach and interpretation. I have also relied on my advisors who have offered guidance as to where my religious background is helpful and where it might be limiting. With writers like Mark Noll and Ron Wells, there have been times where I might want to “demit my status as an evangelical if only I knew where to send in my resignation” (Noll, 1982, p. 8), and yet, over

[1] The term “Evangelical Free” has been occasionally misunderstood to mean “free of evangelicals.” In fact, it means the opposite.

time, I have become more comfortable with this identity at least in so far as it offers me a helpful starting point for this research.

Beyond my own religious upbringing and its emphasis on the importance of the Bible, it is also important to note that software development has been my profession for nearly two decades,[2] and that I have spent a portion of that time creating Bible software both for myself as a mode of personal inquiry[3] and as compensated work for a company that distributes the Bible software I create within developing countries (Marshall, 2012). I am also currently employed in seminary-level religious education overseeing communications and enrollment, as well as the use of technology in the classroom and distance education. The relevance of these experiences to the present research is that my technology background allows me to "speak the language" of Bible software developers, most of whom fit—as I do—within the small but growing Venn diagram overlap of "evangelical" and "programmer." As will be demonstrated below, I have attempted to craft questions that communicate to the software teams that I am "one of them" and that I have a particular interest and insight that other researchers might lack.

And yet, while this ability to think like a developer is valuable when speaking to fellow developers, if unchecked it has the potential to be a hindrance when working with non-developers. The software development community, for example, often discusses the importance of stepping outside its own biases and preferences in order to discover the "user experience" of non-developers (Loranger, 2014). The needs, desires, and usage patterns of those who write software are often idiosyncratic and irregular compared to the average users

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[2] In the early 2000s, I operated a small freelance web development company, and I have also developed open source projects that have been used in WordPress and by companies like Apple, Microsoft, Facebook, Twitter, and others.

[3] For example, I created biblewebapp.com which offers similar functionality to desktop Bible software and yallversion.com (a play on youversion.com) which highlights all the second person plurals in Greek and Hebrew and replaces them with regional variants such as "y'all" (Southern US), "yinz" (Pittsburgh, PA), and "you lot."

(Grudin, 1991), so I have attempted to carefully investigate the way that average users (i.e., who are neither non-software developers nor academics) think about and use Bible software.

One final reflexive note seems important. Because of my embeddedness in various levels of evangelicalism, I have found that my thinking often shifts to how the results of this research might be construed in a prescriptive way. When friends and colleagues inquire about my research, they often ask questions like, "Do you think people *should* be reading the Bible on a phone?" As much as possible, I have attempted to suspend my interest in such prescriptive questions during the course of research in order to allow myself to be open to a range of possibilities, thus enabling my work to be as descriptively and analytically rich as possible.

Evangelical Bible Software Developers

In this section, I will outline my approach to working with Bible software development teams. I will explore the methods I considered for interacting with the developers, and explain how I came to the approach I have chosen. Following this, I will walk through the selection of three software development teams from among the dozens currently working on Bible applications. Finally, I will explain my approach to developing interview questions for each group.

Research Approach

In charting a research direction for interacting with software developers, I initially consider a workplace ethnography approach. According to Hammersley and Atkinson's definition, an ethnographer is to participate "in people's daily lives for an extended period of time, watching what happens, listening to what is said, asking questions, in fact collecting whatever data are available" (Hammersley & Atkinson, 1983, p. 2). Several researchers have used this approach to examine aspects of the software industry including the coding culture in

Bangalore (Kasmir, 2007), emotional issues with mergers and acquisitions (Ager, 2011), the way developers talk about their code (Higgins, 2007), and the how they understand their industry (E. S. Petersen, Nyce, & Lützhöft, 2011).

This approach appealed to me because it might allow the observation of, for example, a new software feature as it was initially conceived by a team, coded into being, tested in the real world, and then evaluated by the company. But as powerful and rich as this approach is, I determined that it would not be feasible for this study for several reasons. Certainly, the time and expense of such an approach at multiple software companies might make it impossible. But on a more practical level, at least one team under consideration—Bible Gateway—functions as a team of distributed developers who rarely meet in person, and observing them would have required fieldwork in the homes of several individuals across the United States. At the other end of the spectrum, almost all of the employees at Faithlife, the company which makes Logos Bible Software, work at a facility in Bellingham, Washington, but the company has over 200 employees which would be unmanageable for a single researcher. YouVersion, with less than 50 employees housed on a large church campus in Oklahoma, was more ideal in terms of size and location. However, while their representatives were very cordial and kind, they were also somewhat slow in responding to requests for communication, which hinted that they were unlikely to agree to a long-term approach. Finally, one of the primary benefits of the workplace ethnography approach is that a researcher unfamiliar with an occupation learns it tacitly through immersion. However, as mentioned above, my experience as a software developer seemed to negate that potential value.

While a traditional ethnographic approach was not viable for following the developers, several scholars have outlined approaches to digital or Internet-based ethnography that offered insight into observing the behaviors of digital Bible readers. Kozinets' updated *Netnography: Redefined* outlines methods of collecting and coding data made publicly online

and in mobile applications. This particular approach would not be applicable to the present work, but Kozinets also contends that a researcher cannot consider only what happens online. He writes, “For many people around the world, online sociality is a part of their overall social behaviour, even their everyday social behaviour” (Kozinets, 2015, p. 17). Similarly, Pink’s recent *Digital Ethnography* (2016) encourages researchers not to focus on the technology itself, but on the human and social behaviors, including those that happen online and offline. These are similar to the works of Campbell and Hutchings above, both of whom have emphasized the relationship between online and offline religious behavior. This is important for understanding the digital Bible because the participants in this study tended to use a combination of print and digital in private and public spaces, meaning that I would need to design tools to engage these activities from a variety of vantage points.

Selection of Companies

These considerations led me to a much simpler approach of selecting three Bible software companies to which I could direct a set of carefully selected questions in a focus group setting. My initial list of companies included the following: Accordance, Bible Analyzer, Bible Gateway, BibleWorks, Crosswire, Digital Bible Society, e-Sword, ESV online, Logos Bible Software, Glo Bible, OliveTree, PC Study Bible, QuickSearch, SwordSearcher, WordSEARCH, and YouVersion.[4] In chapter four, I will explore the origins of several of these companies and their deeper connections to evangelicalism and its institutions, but for the fieldwork portion of the research, these needed to be whittled down to a representative and useful sample.

[4] The companies who produced these applications often changed the way they branded the application’s name over time, including capitalization and spacing. For example, WordSEARCH, as it was called in its first release, is now Wordsearch Bible. I have attempted to use the name that was currently in use at the time under discussion wherever possible.

First, I ruled out the companies for which I have worked or consulted—the Digital Bible Society and Crossway, the publishers of the English Standard Version (ESV) and its electronic versions—in order to avoid conflicts of interest and to ensure that I had an appropriate critical distance from my research. I also ruled out open source projects, such as e-Sword, CrossWire, and Bible Analyzer, in part because of their large, distributed base of contributors and also because historically they have only had access to public domain Bibles making them less popular for general audiences. Finally, I ruled out companies who make only or primarily desktop software, because I wanted to focus on the use of mobile devices by regular churchgoers. This process left several companies, including Bible Gateway, GloBible, Logos, OliveTree, and YouVersion. From these, I selected Bible Gateway, Logos, and YouVersion for the following reasons.

The first and most perhaps most obvious choice was YouVersion since it was the first Bible app available when Apple launched its App Store for iPhones in 2008, and it is currently the first search result in both Apple's App Store and Google's Play Store when using the search term "Bible."[5] Although it still uses the name "YouVersion," the organization has branded its mobile product as "Bible app" making it the default Bible application for many users and leading to an install base of well over 350 million users.[6] YouVersion's business model is also distinct from the other companies in that it is entirely supported by donations from its hosting church (Life.Church, formerly LifeChurch.tv), partner ministries,[7] and its own users.[8] This means that YouVersion is not necessarily driven by the same market forces as the companies that follow, and theoretically, this difference

[5] Search conducted May 15, 2015 and repeated March 12, 2019.

[6] The Bible App. (n.d.). Retrieved June 1, 2019 from, https://www.youversion.com/the-bible-app/. Previous infographics show their growth overtime YouVersion reached 100 million installs in July 2013. Infographics (2014, September). Retrieved from https://blog.youversion.com/infographics/.

[7] Philanthropist and owner of Hobby Lobby and Mardel Christian and Educational Supply, Mart Green, donated a large sum of money to create the "Digital Bible Library" which powers YouVersion (B. Roberts, 2012). YouVersion has also partnered with the television series 'The Bible' for an undisclosed sum (Murashko, 2013).

[8] Hutchings (2014, p. 151) notes the presence of a donation page on the main website.

might lead them down different development paths than their competitors. YouVersion is also unique as a software application in its emphasis on interaction between its users[9] and for its Bible reading plans.

The second software team, Bible Gateway,[10] was chosen because it has a large audience of users and because it represents a different kind of Bible software with a different business model than YouVersion. Bible Gateway is currently owned by Zondervan (J. Weber, 2008), a large U.S.-based Christian publisher that is owned by HarperCollins Publishing. Zondervan also owns Biblica, the publisher of the most widely used Bible version among evangelicals,[11] the New International Version (NIV). For many years, the website BibleGateway.com was one of the only places where one could access the NIV online, which led Bible Gateway to become one of the most highly trafficked Christian websites (Chuang, 2014). Today, it continues to be one of the first websites to be displayed in search engines when searching for biblical texts online. In 2012, Bible Gateway released a mobile application for iPhone users (Rau, 2012) and has since expanded to other mobile platforms. For this study, Bible Gateway will serve as a model of a software development team that is also a content publisher, perhaps leading it to emphasize a different set of actions and features than YouVersion which neither produces nor sells content and from Logos which sells content, but until recently did not produce its own materials.

This leads to Faithlife, the company (Pritchett, 2014) that produces Logos Bible Software[12] and calls itself "The worldwide leader in electronic tools and resources for Bible

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[9] YouVersion 5, released in 2014, had a new emphasis on social interactions: "We developed Bible App 5 to help you bring your closest friends into your journey with God through the Bible" (YouVersion, 2014c)

[10] I have had personal contact with two of the members of the core Bible Gateway team, Rachel Barach and Stephen Smith, in other Bible software related events, but I have never worked directly for or with either on a project.

[11] The KJV is the most popular in the United States overall (Goff et al., 2014).

[12] Full disclosure: As explored I subsequent chapters, my present employer, Dallas Theological Seminary (DTS), developed a software packaged called CDWord in 1989 which was subsequently sold to Logos Research Systems. I was not involved in its creation or sale, but in 2013, DTS entered a partnership with Logos to provide software and library resources to all DTS students, and I did help with that project.

study."[13] Logos was selected because it represents a more academically oriented application[14] with features designed for studying the original languages, accessing additional secondary literature, and preparing teaching materials. Its mobile version was released the year following YouVersion's first release, and while YouVersion focuses almost entirely on Bible reading and Bible Gateway offers some purchasable content and notes, Logos offers a full array of scholarly materials and resources making them a profitable software company (Faithlife, 2012).

Together, these three companies hold a significant market share, represent a range of business models, and emphasize different kinds of Bible engagement, making them an ideal representative sampling of digital Bible software producers. In addition, as we will see in chapter four, these three companies represent three waves of Bible software development, the desktop era of the 1980s in Logos Bible Software, the Internet era of the mid-1990s in Bible Gateway, and the mobile era of the 2000s in YouVersion.

Interview Approach

Once I had selected the three companies and returned to the United States to begin fieldwork in the fall of 2014, I began contacting representatives of all three software companies to ask if I could interview a group of employees involved in the creative development processes of their applications. I also developed and refined a set of interview questions that I hoped would explore the motivations of the individual leaders and programmers as well as offer insight into the company as a whole, including its origin, direction, and goals.

[13] About Faithlife. (n.d.). Retrieved May 15, 2015, from https://faithlife.com/about

[14] The president of Logos Bible Software, which makes both desktop and mobile products once remarked that Logos is for "the pastor and that one guy" referring to those interested in studying the original languages of the Bible. They have since expanded into product lines meant to attract, in their words, "the other 98 people in the church," which includes mobile applications.

I organized my questions into four broad groups. First, I asked for a history of the company and how each member came to be a part of the team. This was done to gain familiarity with each person and establish rapport. I then shifted to ask questions about the goals of the team and its product. I asked questions about what they hoped users would do with the application and what result or benefit they hoped users would gain. Once they told me about their goals, I asked for specifics on how they crafted their software to influence users to perform these actions, and I also asked for the means by which they measured success.

In the second of half of the questions, I further inquired about their development practices, asking questions about how the creative process worked and the sources of ideas for new features. My goal was to uncover what—and who—drove the process. I wanted to know if they were driven by purely business and profit factors, deeply held theological convictions about Bible engagement, a desire to try interesting new things, or some combination of those and other factors. I also planned to ask for an example of something they tried that failed, and I closed the session with a few questions about how each individual team member approached Bible engagement in their own lives.

The final revision of these interview questions was completed in October 2014, after which I received approval from the University of Durham, Department of Theology and Religion's Departmental Ethics Committee. I then confirmed times when the development teams were available for interviews and received consent forms from each member, establishing that they understood the project and that their comments would be anonymous. The approved consent forms and interview questions can be found in Appendix 1.

Evangelical Bible Reader Behavior

Having explored the development side of the social shaping of bible technology, in this next section, I will outline my approach for observing patterns of Bible engagement among

evangelical Christians. First, I will discuss the selection of a group of potential research subjects and, following this, I will outline the four tools I have developed to study how this group of subjects interacts with scripture across print and electronic media.

Selection of Research Subjects

I considered several approaches to finding a suitable group of Bible readers, but during this exploratory phase, an opportunity was presented to me that ultimately proved to be the most feasible. A staff member at nearby Bible church,[15] who heard I was beginning my study, approached me and said that he would be willing to find groups of people to participate in the research. I have given each of churches in this study a pseudonym, and for the purposes of this study, this church will be known as City Bible Church (CBC).

With approximately 2,500 in weekly attendance, City Bible Church qualifies as a "mega-church" that holds to relatively traditional evangelical Christian teachings and acts of Christian service. In a webpage listing the church's six core values, "Scripture" is listed first, followed by Grace, Prayer, Generosity, Authenticity, and Creativity, making it a fairly safe choice as representative of the strand of American evangelicalism that places a high value on Bible engagement. Using the criteria from Multiracial Congregations Project at Hartford University, the church would be classified as "multiethnic" because it is a "congregation where no one racial group is more than 80% of the people" (Emerson & Kim, 2003). This is not surprising given that the church is physically located in what *Forbes Magazine* called the "most diverse neighborhood" (Kolko, 2012) in the United States. Although no public statistics exist on the income level of attendees, judging by the cars in the parking lot, the church has a high percentage of middle and upper-middle income earners which, for this

[15] This church is also the faith community where my family and I worship regularly.

study, means that the participants are likely to have the financial means to own and be familiar with smartphones.

On Sunday mornings, the church has two services during which time various groups of adults meet in classrooms within the church building for what are called “Bible Communities.” These last for roughly one hour and take a variety of forms including hearing a lecture from a church leader, watching a video, or discussing a religious book or a book of the Bible. This setting had the appeal of not requiring me to find participants willing to come to an event outside of their normally scheduled activities. After discussing with the aforementioned church staff member, he selected two communities of approximately thirty mixed-gender adults ranging in age from late 20s to mid 40s. One group met from 9–10 a.m. and the other from 11–12 a.m. which allowed me to work with both groups on a single Sunday morning. He also suggested a third group with a similar format but slightly older participants that met on Sunday evenings.

In addition to this first church, I sought out two other churches in order to provide a larger and more diverse sample size, but remain within evangelicalism. After reaching out to several contacts within the Dallas / Fort Worth area, I was able to confirm meetings with two additional churches, Petra Community Church (PCC) and Hidden Baptist Church (HBC). Petra is a non-denominational church with approximately 5,000 in weekly attendance. Its pastor also teaches on a nationally syndicated radio ministry he founded, and he has been recognized as one of America’s most well-known and influential preachers (LifeWay Research, 2010; Reed). For all his national influence, this pastor has not over his long career been the subject of controversy for his actions or statements, and thus represents a quiet stream of American evangelicalism which emphasizes Bible teaching in the pulpit and Bible studies among its members. One of the church’s pastors suggested that I come to a Sunday morning Bible study class, similar in size, timing, and age range to the groups at CBC. The

class meets every Sunday with members who are highly committed churchgoers, and it regularly invites guest speakers meaning that my presence as an outsider was not unusual.

The third church has received the pseudonym Hidden Baptist Church because it had recently changed its name from "First Baptist Church" to a name without the word "Baptist." This rebrand was designed to appeal to a wider range of evangelicals who are not inclined toward denominations, and it is part of a trend among some churches in the Southern Baptist Convention (Brumley, 2014; Montoya, 1999). Hidden Baptist is smaller and less ethnically diverse than City Bible Church, but the Sunday morning community that I was invited to survey had a wider range of ages than either of the other churches including a few teenagers and several adults in their 60s. It draws its doctrinal emphasis from the 1963 Baptist Faith and Message which, like City Bible and Petra, puts the Bible as the first and most foundational doctrine. Together, these three churches and the almost two hundred participants serve as a representative sample of American Bible-emphasizing evangelicals. In the next section, I will explain the instruments I designed to explore their relationship with technology and how they use digital Bibles.

Instruments for Studying Bible Engagement

To map out the complexities of how people choose which medium they will use for Bible engagement and how those media might, in turn, influence their experience of that Bible engagement, I considered several strategies. I first considered the previously mentioned approach of Beilo (2009b), Malley (2004), Crapanzano (2000), and others who observed participants in "Bible study" settings over several months, carefully noting their strategies for handling scripture. This kind of long-term observation is appealing because it offers a chance for the researcher to observe patterns that might not appear in self-reporting. However, while group interaction is important in this study, it is not the primary or only concern and likely would have been too limiting for the present work. I also considered devising a system of

self-reporting through video diaries where participants would be asked to read, study, or meditate on scripture using various forms of media for several weeks and record reflections on their experience. Compared to a purely observational approach, a self-reporting method has the potential advantage of generating more vulnerable (and perhaps truthful) answers than participants might be inclined to give in a public setting or with a researcher. However, this approach was also abandoned because it too would limit the scope to a single form of engagement—personal Bible reading—and would only measure what the participants might say. I also looked into methods for larger scale "big data" acquisition, but as Boase (2013) has laid out in his work, this approach can present methodological and ethical challenges.

I considered surveys and focus groups[16] on Bible engagement, and this led me to create four distinct instruments: a Bible engagement survey, a Bible reading comprehension assessment, a ten-day Bible reading exercise, and a recorded focus group. I designed all four instruments to be used together in a single one-hour setting, which would allow me to measure multiple forms of Bible engagement in a relatively compressed timeframe. This approach also puts the work it in line with studies comparing print and digital reading strategies, and it has the advantage of collecting both public and private responses from participants. The project description, consent forms, and surveys given to each of the participants can be located in Appendix 2.

1. Bible Engagement Survey

The first instrument was a one-page survey that asks participants how often the read the Bible, which media (print, phone, tablet, or computer) they prefer to use, and which forms of Bible engagement (study, devotional reading, etc.) they perform. Existing surveys, such as the annual "The State of the Bible" (2019) survey commissioned by the American Bible

[16] I learned much from Perrin's (2015) work comparing Biblical interpretation of several passages across theological traditions using a focus group approach.

Society and Barna Research, ask broad questions such as, “All things considered, in what format do you prefer to use the Bible – print, digital, or audio?” but they do not explore the interplay between these devices nor the settings in which one is preferred over the other.

In order to delve more deeply into these questions, I created a grid for the participants to fill out which had forms of media along the top columns and forms of engagement down the side rows of the table. For the top of the grid, I selected four forms of media (print, phone, tablet, or computer) based on primary product categories currently available on the market[17] and following research by Kang (2012) who argued that these three screen sizes (phone, tablet, and computer) were each uniquely suited toward particular forms of Bible engagement. For the side of the grid, the fourteen forms of engagement I selected can be broken down into two categories. First, I chose seven activities loosely drawn from the twelve forms provided by Taylor University Center for Scripture Engagement in partnership with Bible Gateway (Collins, 2014). Several practices such as “singing the scripture” and “hand copying scripture” seemed unlikely to have broad adoption, but I did include *Lectio Divina* because it is not historically connected with American evangelicalism, and therefore serves as a kind of negative litmus test for evangelicals. In addition to the seven traditional Bible reading activities, I also included two functions which more readily lend themselves toward digital media (listening to audio and searching for a passage), as well as five setting-based Bible activities (at home, at work/school, during a sermon, in a small group, and with children) which might draw out how the convenience of a smartphone in a particular setting would influence behavior.

Toward the beginning of the survey, participants were also asked how often they engage scripture with the following choices as answers: Daily, A few times a week, Once a week, or

[17] For example, Apple, Inc. has distinct product lines for computers (MacBook laptops and iMac desktops), tablets (iPad), and phones (iPhone).

Less often. This was divided into two questions, one asking, “How often do you tend to get the chance to engage Scripture in some way,” and a second which asked, “In an ideal world, how often would like to engage the Bible.” An answer of “Daily” to either question is a likely indicator of an evangelical who considers regular Bible engagement to be the expected norm. This pair of questions was designed to allow the participants to recognize possible discrepancies between their ideals and their practices, and I planned to ask the participants to discuss these in a focus group following the survey. In the final section of the survey, participants were asked which Bible software applications they preferred to use and asked a single open-ended question about how their Bible engagement patterns had changed since they started using electronic devices to access scripture.

2. Bible Reading Comprehension Test

Following the administration of the Bible engagement survey, the participants were split into two groups, a print reading group and a screen reading group. They were both asked to read a section of scripture and take a six-question assessment of comprehension.

This instrument was modeled after the myriad studies comparing the comprehension of print and digital readers when reading the same text. Early studies comparing print and screen reading found that the large CRT monitors of the era decreased comprehension (Dillon, 1992), but more recent work comparing print and tablet reading indicates a smaller gap in comprehension, especially when certain conditions are introduced such as a time limit (Noyes & Garland, 2008). In addition to studying basic factual recall, researchers like Mangen (2013) have shown that digital formats impede a reader’s ability to recall the order of events in a story, and other researchers have considered affective and aesthetic differences between print and electronic media (Paulson & Armstrong, 2010). The goal of this instrument was to see where Bible engagement might fall in this spectrum and detect whether factors like

reverence for the scripture or being in a religious environment might trigger a different reading mode than what was observed in previous studies.[18]

One of the primary considerations in designing this instrument was the selection of an appropriate text of scripture. I concluded that four criteria were important: first, the passage needed to be relatively unfamiliar to the readers so that the asessment results would not be based on their prior knowledge. I examined the websites of the churches under consideration[19] and found that they had recently taught from Genesis, Exodus, Ruth, and the Gospels, so these were eliminated from consideration. At the same time, I did not want to select from a genre which readers might find difficult to understand or which would elicit too much variation in opinion, so as a second criterion, I eliminated prophetic and apocalyptic texts. Third, I wanted to find a text with some chronological elements so that I could ask questions in line with Mangen's findings regarding digital reader's difficulty with ordering events. Finally, I wanted a text that would likely elicit an emotional response to see if that might differ across media.

To meet these criteria, I considered various less familiar narratives in books such as 1 and 2 Kings and Acts, looking for places where there might be pronounced differences in print and digital media similar to the ending of Mark as pointed out by Torma and Teusner (2011). Ultimately, however, I settled on the epistle of Jude for the following reasons. First, of the canonical epistles, I could find no references to Jude in the sermons or study materials of the churches' website, indicating that it is not often read or studied and that the participants were relatively unlikely to know the answers ahead of time. Indeed, scholars have noted that Jude is "rarely the text for a sermon" (Peter H. Davids, 2006, p. 7) and its message is "alien to many in today's world" (Schreiner, 2003, p. 403) making Jude perhaps "the most neglected

[18] These and other studies will be explored in greater detail in chapter seven.
[19] Sermon media from the churches also include Hosea, Jonah, Mark, and Acts as well as other topical sermons, but none that listed Jude as a primary text.

book in the New Testament" (Rowston, 1975, p. 554). Second, Jude is very short (approximately 650 words) which would mean that there was little chance that the difference in print versus digital reading would be due to fatigue in scrolling. Third, while it takes the familiar form of epistolary literature, Jude references several Biblical narratives, enabling me to ask readers about the order of those stories. Finally, Jude contains both strong warnings ("Jesus … destroyed those who did not believe" Jude 1:5) and more gentle admonitions ("Be merciful to those who doubt" Jude 1:22) which I hoped might trigger emotional responses that might differ across media.

The follow-up comprehension assessment was designed to be in line with the relatively short length of Jude. I created a series of six questions, the first three of which were multiple-choice questions that asked for simple factual recall (e.g., "Jude mentions that he has a brother. What is his name? □ James, □ Peter, □ Andrew, □ Thomas"). The fourth question asked the participants to indicate the order in which several stories appeared in Jude. Initially, I selected five of the Old Testament allusions in Jude, but correctly ordering these proved to be too challenging even for some seminary students on whom I performed a pilot test, so I adjusted the questions to include only three stories which are located at the beginning, middle, and end respectively of Jude's references (God rescuing the Jews from Egypt [1:5], Michael the archangel [1:9], Enoch's prophecy [1:14]).[20] The fifth question was open-ended, asking the readers about Jude's overall point in the book, which I hoped would show more complex differences between print and digital media reading than questions of factual recall. The sixth and final question asked readers how they felt after reading Jude, prompting them with suggestions like "discouraged, encouraged, confused, joyful, etc." with the goal of comparing the emotive impact of media.

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[20] This left out the references to Sodom and Gomorrah (1:7) and Cain and Balaam (1:11). The stories of Cain, Balaam, and Enoch are not presented in the same order as in the Old Testament which might have led to the confusion in the pilot test.

In one important way, my instrument was different from previous studies. I initially considered providing a uniform set of reading materials to participants by purchasing a set of printed Bibles and renting a set of tablets or smartphones with digital Bible software preinstalled. In theory, this would eliminate variances in Bible translations, screen sizes, and Bible apps. However, I choose instead to allow the participants to use the devices or printed Bibles they brought with them. I did this because my sample size would be relatively small, and there would likely be enough pre-existing, uncontrolled variables that attempts to normalize the media were unlikely to make a measurable difference. More importantly, I wanted to avoid introducing complications based on unfamiliar media, and instead examine how readers responded using media with which they were already comfortable and familiar.

3. Daily Bible Reading Exercise

In addition to understanding how digital media might affect comprehension of the Bible, I also wanted a way to measure how print and digital media might influence behavior over time. To do this, I planned to ask participants to engage in a daily Bible reading exercise where they would read the Gospel of John over the course of ten days. As with the previous instruments, half the group would use the digital media they brought with them and the other half would use their printed Bible.

My criteria for selecting a section of scripture for the reading plan included something that would take longer than one week, but less than one month, and something that was familiar enough not to turn readers away based on confusion or boredom. The selection process was also influenced by the reading plans available in the YouVersion Bible app.[21] Rather than providing a tool to create a customized reading plan, the YouVersion app has pre-created reading plans for each book of the Bible, where users read two chapters per day to complete the plan. I initially considered Mark’s short Gospel, but because the YouVersion

[21] This was based on the available reading plans in YouVersion as of March 2015.

plan was only eight days, I instead selected the Gospel of John (the second longest Gospel), which would take ten days to complete in YouVersion's plan. I then drafted a print-based Bible reading plan that mirrored YouVersion's to hand out to participants. I also created a printed survey that would allow participants to report the medium they used and how much of the reading plan they were able to finish. However, in practice, I found that it was difficult to get the printed survey results back from participants, so I created an electronic survey that I emailed to participants ten days after the reading plan began.

4. Focus groups

The final instrument was a focus group with the participants that followed the media use survey, comprehension assessment, and preparation for the daily reading plan. During the one hour I would be with each of the participant groups, I planned to use ten minutes for introducing the research, ten minutes for the survey, ten minutes for the comprehension test, and five minutes for giving instructions on the Bible reading plan. This would leave approximately twenty-five to thirty minutes to conduct a focus group, which would later be recorded, transcribed, coded, and analyzed.

For this session, I created a list of eighteen potential questions. To begin, I planned to ask questions about personal experiences with Bibles and Bible-related media including the experience of one's "first Bible" (Malley, 2004, pp. 67-68). I then moved on to ask the participants to reflect on the survey questions with the matrix of Bible media and forms of engagement and discuss how they make those choices. This was followed by a set of questions asking about the purpose of Bible engagement, why it was important to each person, and why it might differ between print and digital media. Finally, I asked some questions about how the presence of phones during churches services might affect their concentration.

Methodology Summary

Together, the focus group interviews with three software development teams and focus group assessments with three churches will allow us to explore both sides of the digital Bible industry. These tools will allow us to observe the ways evangelical churchgoers use and discuss digital Bibles and uncover how the evangelical identities of the developers have contributed to the social shaping of Bible technology. Before exploring this data in chapters five, six, and seven, the next chapter will be spent laying out a descriptive framework of evangelical attitudes toward scripture, technology, business, and the following chapter will trace the history of Bible software.

CHAPTER 3:

EVANGELICALS, THE BIBLE, AND THE SPIRIT OF PRAGMATISM

The National Association of Evangelicals, an organization founded in 1942 as part of a reboot of American evangelicalism under the banner of neo-evangelicalism, recently admitted that the most common reason people visit their website (nae.net) is to find a definition of the term "evangelical."[1] They highlighted this to make the point that while the term evangelical is used often in discussions about religion, it is not often well understood or clearly circumscribed. Indeed, the challenge in meaningfully defining the term evangelical reaches back into the 18th century when Lord Shaftesbury, writing in the British context, lamented, "I know what constituted an Evangelical in former times, [but] I have no clear notion what constitutes one now" (Bebbington, 1989, p. 1). And, just as the fieldwork for this project was completed in early 2016, the definition of evangelical came under a fresh wave of scrutiny when 81% of Americans who identified as "white evangelicals" voted overwhelmingly for Donald Trump (Crossley, 2016, p. 112), a candidate whose public image stood against what had once been considered essential to evangelical morality. This quandary over defining evangelicalism is important to this project because we are exploring why American evangelicals have been so drawn to the digital Bible, how its development and consumption has influenced the way they engage the Bible, and how this can inform us regarding the current state of evangelicalism.

Taking a social construction of technology (SCOT) approach, one of the first steps in examining the development of digital Bible technology is mapping out the "relevant social

[1] "What is an evangelical? That question brings more people to the website the of the National Association of Evangelicals than another other search" (2017, p. 5).

groups" and their "technological frame." This involves considering the beliefs and values of those groups and exploring how they contribute to the way each group assigns meaning to technological artifacts (Bijker et al., 1987, pp. 6-8). In our case, the overarching group is American evangelical Christians with a focus on two sub-groups: digital Bible developers and Bible readers in a church setting.[2] A deeper investigation into these groups will require unpacking the historical development of term "evangelical," in part because of the aforementioned disputes over the boundaries of the label, but also because a closer look offers us additional insight into how evangelicalism as social group has tended to interact with technologies. Moving from the general SCOT approach into Campbell's (2015) more focused religious social shaping of technology (RSST) approach, one should work to identify the history and traditions, core beliefs and patterns, community negotiation, and community framing and discourse of the religious group. The important methodological principle is that a group's response to technology is "negotiable" (Campbell, 2010, p. 50) not predetermined, and that a group's unique negotiation process is born out of its values, including its history and religious tradition, as well as the ways in which it has negotiated technological change in the past. Religious groups like evangelicalism often gain definition and clarity in their interactions with the culture around them, and technology can serve as a window into this relationship.

In this chapter, I will explore several avenues for understanding the characteristics and historical development of American evangelicalism, especially its emphasis on the Bible, and I will then offer a description of its technological frame and negotiation approach which I have labeled Hopeful Entrepreneurial Pragmatism (HEP). I hope to show that although scholars have suggested several different and sometimes conflicting ways of understanding

[2] Other relevant groups include non-evangelical Bible readers, along with the broader categories of hardware creators, software developers, and general users of digital products. These groups will be considered tangentially in the following chapters, but the focus will remain on evangelical developers and users as defined in chapter two.

evangelicalism—and some such as Stewart argue that it is better to speak of multiple overlapping “Evangelicalism*s*” (Stewart, 2005, p. 152) rather than a single coherent group—the story of the digital Bible brings together characteristics shared by several approaches. As we observe the social construction of the digital Bible industry, we will find that historical, doctrinal, phenomenological, and sociological accounts of evangelicalism overlap and interact in ways that offer a more complex, nuanced, and rich understanding of evangelicalism.

Exploring Evangelicalism

Methods of Approach

Timothy Weber has argued that “Defining evangelicalism has become one of the biggest problems in American religious historiography” (2001, p. 12), and this is true for other disciplines beyond historiography. I will take an integrated approach to defining evangelicalism, drawing together overlapping disciplines, each of which contributes toward understanding evangelicals and their orientation toward the digital Bible. This includes historical approaches that seek to find a clear starting point for evangelicalism as a unique religious movement in the centuries following the Reformation and sociological approaches that tend to focus on evangelicalism beginning in the later part of the twentieth century. We will also draw on the doctrinal definitions that evangelical leaders have offered over time as well as polling data that examines the behaviors of people who self-identify as “evangelical” or “born again.” Across this spectrum, one of the major questions is whether evangelicalism is best understood through internal theological language or external descriptions of characteristics and behaviors that, in some cases, do not appear connected to religious belief. Crossley puts the question this way, “Are Evangelicals primarily recognizable by the doctrinal propositions to which they actively subscribe, or by observable and

phenomenological traits which they may or may not consciously determine?" (Crossley, 2016, p. 112). Rather than take a single approach, this project will draw from each of these perspectives, noting their strengths and limitations, arguing that together they form a richer view of evangelicalism that will contribute to our understanding of their approach to the digital Bible.

In the following section, I will give a broad outline of the history of evangelicalism, drawing on scholarship that highlights evangelical's relationship to the Bible and its posture toward societal change. My goal is not to give an exhaustive account of evangelicalism's historical development, but rather, by looking at three eras—the early years of the Reformation, the turn of the eighteenth century, and the mid-twentieth century onward—we will see how common elements of evangelicalism's history and tradition bubble up through time, eventually setting the stage for commercial the Bible software that would emerge in the 1980s.

Early Protestant "Evangelicals" (1517)

In the early Reformation era, the term "evangelical," derived from the Greek *evangelion* (εὐαγγέλιον) meaning "gospel," was first used as an alternative to the term "protestant." If the term "protestant" focused on what the Reformers were against (the Roman Catholic church), Martin Luther used the Latin word *evangelium* to show what the emerging movement was for—the gospel, a simple message of salvation through faith in Jesus found in passages like 1 Corinthians 15:1-5 and Ephesians 2:8-9.

The term made its way into English in the early sixteenth century, when William Tyndale began using word "evangelical" as an adjective, and the Roman Catholic Sir Thomas More picked up the term, referring negatively to "Tyndale [and] his evangelical brother Barns" (More, 1973). For More, "evangelical" was a pejorative synonym for Protestant. But Fisher has argued that in this era, the term began to take on a new sense, namely that to be an

evangelical was to be a "true-Christian" that was more "gospel-centered, Bible-based, and authentic" (Fisher, 2016, pp. 187, 188) than, not only Roman Catholics, but also other Protestants. Over time, just as Protestants had distanced themselves from the problems they saw in Rome's understanding of the Bible, evangelicals began to emerge as those who distanced themselves from the problems they saw in how other Protestants interpreted the Bible.

For all the changes that evangelicalism would undergo in the coming centuries, this focus on a gospel message that is "Bible-based" would become a key marker of evangelical identity. The central importance of the Bible in faith and practice would also become an important factor in the emergence of the Bible software industry as evangelical programmers sought to combine their devotion to the Bible with their technological skill.

The Emergence of Evangelical*ism* (1700s)

The challenge in more narrowly defining evangelicalism as something distinct from Protestantism comes in the late seventeenth and early eighteen centuries. In David Bebbington's classic work, he argues that a new form of Christian practice emerged in the 1730s in England with the conversion of Howell Harris and Daniel Rowland (Bebbington, 1989, p. 20), followed by George Whitefield and the Wesley brothers, who spread the movement in the American colonies alongside Jonathan Edwards. Bebbington identified four characteristics of the new movement: "*conversionism*, the belief that lives need to be changed; *activism*, the expression of the gospel in effort; *biblicism*, a particular regard for the Bible; and what may be called *crucicentrism*, a stress on the sacrifice of Christ on the cross" (Bebbington, 1989, pp. 20-23). These four characteristics were not necessarily exclusive to evangelicals, but Bebbington argued that their combination was unique. In particular, he points out that the "activism" was something new, especially as it took form in the missions movement of the nineteenth century. This impulse for spreading the gospel using nineteenth

century methods and technology,[3] such as faster ships, cheaper printing, and better hospitals, would continue in the twentieth century as evangelicals embraced radio and television, and later computers, the Internet, and mobile phones to share the scriptures. As we will see below, the hopeful embrace of technology also incorporated a pragmatic approach that valued missional outcomes, sometimes at the expense of doctrinal conviction (Crossley, 2016, p. 115).

While Bebbington places evangelicalism's origins in the 1730s and his thesis has "achieved scholarly hegemony in less than ten years after its initial publication" (Gribben, 2005, p. 86), others find the origins of the movement somewhat earlier,[4] such as Worthen, who writes, "In the late seventeenth century, Pietist preachers critiqued the state churches that emerged from the Reformation as overly formal and cerebral. They called on believers to study the Bible and strive for personal holiness" (Worthen, 2016, p. 6). Similarly, Noll's work seeks to push "the history [of evangelicalism] back into the seventeenth century" (Noll, 2010, p. 24) so as to include a more international group of Christians who displayed characteristics of evangelicalism (W. R. Ward, 2006). Although these scholars disagree on the exact start date, they agree that the movement emerged as a response to the massive societal changes taking place at the time. In her biographical treatment of Sarah Osborn, an influential American female evangelical, Brekus writes that "Sarah was drawn to evangelicalism because it helped her make sense of changes in everyday life that did not yet have a name. Words like *capitalism*, *individualism*, *Enlightenment*, and *humanitarianism* were not coined until the late eighteenth and nineteenth centuries, but language often lags behind reality" (Brekus, 2013, p. 7).

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[3] Etherington (2005) writes about the connection between bringing the gospel and bringing Western technology and colonialism.

[4] Stewart challenges the Bebbington thesis, arguing that the four elements of the quadrilateral were, in fact, associated with one another prior to the 1730s and that evangelicalism was not a response to unique factors the eighteenth century, but rather, "arose in light of recurring perennial factors" (Stewart, 2005, pp. 138, 142).

In other words, evangelicalism was as much a distinct set of religious ideas and practices as it was a posture for absorbing and simultaneously resisting what was happening societally. Worthen helps draw this out by framing evangelicalism in terms of three questions that they have been perennially asking: "(1) How do I reconcile faith and reason? That is, how do I keep truth one thing so that what I know by faith and what I know by Enlightenment reason remain the same? (2) What is true salvation? The way evangelicals often talk about it is, how do I have an authentic relationship with Jesus? (3) How do I recognize private faith with the secular public square? How do I reconcile private and public in my obligations as a Christian?" ("Molly Worthen: Three questions that open up evangelicalism," 2013). In these works, a portrait of evangelicalism begins to emerge that is simultaneously a set of religious beliefs and practices alongside a distinct disposition, initially toward the Enlightenment and later toward other developing social realities.

Neo-Evangelicalism (1940s)

If evangelicalism initially emerged as a distinct movement in the post-Enlightenment world, another significant era of evangelicalism—what Alistair McGrath called, "an evangelical renaissance in the West" (McGrath, 1993, p. 27)—began during the middle of the twentieth century. Prior to this, evangelicalism had become largely synonymous with fundamentalism, or those who held to a set of fundamental doctrines.[5] By the 1930s, some conservative evangelicals in North America felt that fundamentalism had lost its way, taking negative stances such as "anti-intellectualism that suspects scholarship and formal learning… apathy toward involvement in social concern… [and] separation from all association with churches that are not themselves doctrinally pure" (Hubbard, 1991, p. 9). Some of these men, including Billy Graham, Harold John Ockenga, Carl F. H. Henry, and Charles Fuller, began

[5] Marsden offers the following tongue-in-cheek distinction between fundamentalism and evangelicalism: "My own unscientific shorthand for this broader usage is that a fundamentalist (or a fundamentalistic evangelical) is 'an evangelical who is angry about something'" (Marsden, 2006, p. 235).

to use the term "evangelical" not as a synonym for fundamentalism, but a way of distinguishing their outlook as a more authentic form of faith. This reframing recalls Fisher's argument that evangelicals tend to see themselves as a form of "true Christianity." The neo-evangelicals went on to embrace the media and technology of their day, creating radio programs, magazines, and book publishers, as well as universities and seminaries. At the same time, their self-identification as "evangelical" kicked off renewed interest in more clearly defining the term and its boundaries. Crossley argues that beginning in this era, the word was used with "greater intensity and was deployed in an increasingly technical manner" (Crossley, 2016, p. 112). But while evangelicals attempted to define themselves as adhering to a set of conservative doctrines and outward practices, Marsden argues that "American evangelicalism in the 1960s was a vast, largely disconnected conglomeration of widely diverse groups" (Marsden, 1987, p. 230). This decentralized but interconnected state of the movement betrays another key aspect of American evangelicalism—its deeply independent and entrepreneurial character. As protestants, evangelicals tend to reject formal religious authority structures, and as Americans, they could not rely on the government funding found in Europe. This led American evangelicals to be highly adaptable and comfortable with creating new models of ministry based on cultural trends. In the twentieth century, as evangelicals embraced contemporary media such as television, radio, and print, some began to form small religious empires around personalities and programs. Though not formally connected through an ecclesial structure, these churches and ministries fed off and relied on one another and, as we will see in the next chapter, these organizations formed the strata on which evangelicals with technical knowledge would build the digital Bible industry.

In the mid-1970s, evangelicalism began to take on more of a political meaning when Jimmy Carter, a self-proclaimed "born again" Christian, was elected as the president of the United States, and *Newsweek* declared 1976 to be the "year of the evangelical" (Meacham,

2006). *Time* magazine identified evangelicals as “basically conventional Protestants who hold staunchly to the authority of the Bible … [and] in making a conscious personal commitment to Christ … known as the born-again experience” ("Back to that Old Time Religion," 1977). This public attention and discussion led sociologists like Stephen Warner to call for a fresh look at evangelicalism, acknowledging biases and barriers within his discipline.[6] He concluded that evangelicalism should be understood as a “*Biblically-based* Christianity that emphasizes the *personal relationship* of the believer to Jesus” (R. S. Warner, 1977, p. 2). In the early 1980s, other sociologists took up the charge offering more careful analyses of conservative Protestantism (Bruce, 1983) and evangelicalism. Hunter (1981), for example, expanded Warner’s understanding of a personal relationship with Jesus to include affirmations of the deity of Christ and the necessity of personal faith. He also expanded the idea of being “Biblically-based” to include the concept of inerrancy, but Ammerman countered that including inerrancy narrowed the definition too much and excluded the “growing segment within evangelicalism that would not claim that they believe the Bible to be ‘inerrant’” (N. Ammerman, 1982, p. 170).

Historians like Bebbington would draw on this discussion as they worked to connect the neo-evangelicalism of the twentieth century with earlier iterations of evangelicalism, all of which emphasized the importance of the Bible.[7] Although Carter’s presidency brought the term “evangelical” into the mainstream, some evangelicals such as Jerry Falwell, Sr. saw more opportunity for political gain through Carter’s political opponents, the Republican Party. In the late 1970s, Falwell and others formed the New Christian Right and the Moral Majority (Fackre, 1982; McCuen, 1989; M. A. Sutton, 2013), which some in the media

[6] These biases included understanding evangelicalism primarily as an expression of social class and being unworthy of study because it did not cohere with the liberal outlook of sociology (R. S. Warner, 1977).

[7] Additional historical, sociological, and theological works (N. T. Ammerman, 1987; Candy Gunther Brown & Silk, 2016; J. D. Hunter, 1983; Kelley, 1977; Kyle, 2006; Marsden, 1991; Penning & Smidt, 2002; Tamney, 2002; Treloar, 2017; R. Warner, 2007; Wuthnow, 1989) continue to explore the connections between historical and present-day evangelicalism.

credited with helping Reagan win his first presidential election (Wilcox & Robinson, 2011, p. 6). Although some sociologists disputed the claim that conservative Christians affected the 1980 election (Johnson & Tamney, 1982), the "New Religious Right," as they were called at the time, continued to grow in power as they mapped their theology to the Republican party's ideals (Capps, 1990).

This increased presence in public life led political polling organizations to begin including questions about whether or not participants had been "born-again" or had a born again experience, and researchers used this information to study evangelical behavior especially during elections. However, Stezter points out that these polling instruments varied during the 1970s through the late 1990s, and "these definitional variances … created a disparity in percentage of evangelicals studied, ranging from 7 percent (Barna, 1998) to 47 percent (Gallup, 1999)" (Stetzer, 2017, p. 12). Stetzer goes on to argue that "evangelical" should not be understood by self-identification with the term but by adherence to core beliefs that roughly correspond to the Bebbington Quadrilateral. LifeWay Research and the Barna Group now use these theological indicators in some of their research. As the methodology stabilized, Noll notes that, "by the start of the twenty-first century, evangelical Christianity had come to constitute the second largest grouping of Christian believers in the world" (Noll, 2010, p. 19).

The Pew Research Center (2014) reports that 25.4% of Americans identify as evangelical, but that the percentage varies by metro area, falling as low as 9% in New York City and reaching as high as 38% in Dallas, Texas. These statistics have been shifting in the last decade with the Public Religion Research Institute reporting that during the decade spanning from 2006 to 2017, those identifying as white evangelical[8] Protestants dropped from nearly

[8] PPRI defines "evangelical" as "those who self-identify as Protestant Christians who also identify as evangelical or born again."

one quarter (23%) to fewer than one in five (17%) (Cox & Jones, 2017). PRRI also notes that other significant demographic changes have taken place during this same time period, and that while the number of "white evangelicals" has decreased, the number of non-white Americans who identify as "evangelical" has increased.

Even as the demographics have shifted for evangelicalism as a whole, polls show that "white evangelical Protestants" vote consistently for Republican candidates (G. A. Smith & Martínez, 2016). This voting pattern has led some to contend that evangelicalism in America no longer has a theological or doctrinal character but has become largely synonymous with political positions. Mark Labberton (2016), president of Fuller Theological Seminary, lamented how the term evangelical has shifted:

> The word "evangelical" has morphed from being commonly used to describe a set of theological and spiritual commitments into a passionately defended, theo-political brand. Worse, that brand has become synonymous with social arrogance, ignorance and prejudice — all antithetical to the gospel of Jesus Christ.

Labberton was writing in response to the election of Donald Trump whose presidency led to a fresh wave of evangelicals battling over both the usefulness of the term and who should be included in it.[9] Analysis and interviews about why evangelicals voted for Trump suggest a wide range of reasons including that they felt he would represent their religious ideals in government, such as appointing conservative judges, and that he would advocate for their religious freedom. A the same time, some explained his immoral behavior by saying that they did not try to elect a "pastor" (Gabriel, 2016), but rather someone who could be strong in the midst of changes in American culture and global economics (Renaud, 2017). More consideration of evangelicalism, politics, and the Trump election will follow below, but what we can begin to see is that evangelicals have had a consistently pragmatic bent and a willingness to align themselves with positions or people they do not agree with if it serves

[9] For example, Labberton and other evangelicals contributed to a book (Labberton, 2018) discussing the ongoing value of the term and the movement.

ends to which they are committed. As Christian Smith argues, this constant state of being "embattled and thriving" (C. Smith & Emerson, 1998, p. 218) is enabled by evangelicalism's flexibility and adaptability within its pluralistic environment. Though evangelicals are sometimes seen as those who reject cultural movements (Rosman, 2012), their malleability and adaptability to cultural change enable them to quickly adopt new technology and, in the case of the digital Bible, to dominate an entire industry.

The Supremacy of the Bible

In the brief historical overview above, I have attempted to frame evangelicalism as both a religious tradition with a distinct set of beliefs and values and, simultaneously, as a posture toward changes in society. I now want to narrow in on one of these values that is very significant to Bible software: the Bible itself, and its status for evangelicals theologically and socially. I will begin by exploring the ways evangelicals themselves discuss their view of the Bible, and I will then draw on studies of evangelical behavior in Bible reading and Bible study settings.

Although scholarship seeking to define evangelicalism is relatively recent, for the last two centuries, evangelicals have regularly sought to define themselves theologically. This can take the form of declarations made during doctrinal flashpoints such as inerrancy,[10] open theism (Hillborn, 2004, pp. 81-82), or views on sexuality and marriage,[11] but more often they are lists of beliefs to which the authors claim all true evangelicals should adhere to or strive toward. These lists can be important identity markers for some evangelicals, such as Southern Baptist Theological Seminary president Albert Mohler, who is critical of what he calls "phenomenological" accounts, including the Bebbington Quadrilateral, because they are "so

[10] Marsden followed Fuller Theological Seminary's change of position regarding inerrancy (Marsden, 1987, pp. 111-113, 213-114, 246).

[11] For example, on August 29, 2017, the Council for Biblical Manhood and Womanhood released the "Nashville Statement" (nashvillestatement.com) which attempted to outline a biblical view of marriage and gender in response to changes in American religious culture.

vague as to be nearly useless in determining the limits of evangelicalism" (Mohler, 2011, pp. 73-75). Mohler goes on to argue for a "confessional evangelicalism" that is "centered and bounded."

As we will see, these lists differ in length and content, but a consistent element found in each of them is an emphasis on the central importance of the Bible. For example, in the mid-nineteenth century, J.C. Ryle published five distinctive principles of evangelicalism, the first of which is "the absolute supremacy it assigns to Holy Scripture," (Ryle, 1867, p. 6) and the other four are related to sin, Jesus, and the Holy Spirit's role.[12] Eighty years later, when the National Association of Evangelicals was founded in 1948, Harold Ockenga helped create its doctrinal statement which consists of seven key doctrinal elements, including more historically orthodox doctrines such as a statement on the Trinity, the nature of Christ's deity, and the resurrection. Even with these additions, the NAE statement contained no reference to creeds, but instead declared as its first point that their foundational belief was: "We believe the Bible to be the inspired, the only infallible, authoritative Word of God" (Ockenga & Marston, 1946). In 1978, just before the creation of the Moral Majority, J.I. Packer offered a six-fold definition that includes unique elements such as the importance of fellowship, but he too began with "the supremacy of Scripture."[13] John Stott, another twentieth century evangelical Anglican offered a three-fold, trinitarian definition of evangelicalism, but he also grounded his definition with the strong claim that "Evangelical people are first and foremost Bible people, affirming the great truths of revelation, inspiration and authority. We have a higher view of Scripture than anyone else in the church" (Stott, 2013, pp. 28, 75). Later, Packer and Oden would survey twentieth-century doctrinal lists and declarations including

[12] The remaining four are: "the depth and prominence it assigns to the doctrine of human sinfulness and corruption," "the paramount importance it attaches to the work and office of our Lord Jesus Christ," "the high place which it assigns to the inward work of the Holy Spirit in the heart of man," and "the importance which it attaches to the outward and visible work of the Holy Ghost in the life of man" (Ryle, 1867, pp. 7-10).

[13] His other elements include the majesty of Jesus Christ; the lordship of the Holy Spirit; the necessity of conversion; the priority of evangelism; the importance of fellowship (Packer, 1978, pp. 15-23).

those from Lausanne Movement, InterVarsity, and other evangelical groups, combining them into a longer list of sixteen emphases. Even with a relatively long list they emphasized that "Evangelical Christians, in our definition, are those who read the Bible as God's own Word, addressed personally to each of them here and now; and who lie out of a personal trust in, and love for, Jesus Christ as the world's only Lord and Savior" (Packer & Oden, 2004, p. 19).

Each of these statements confirms Bebbington's claim that "biblicism" is a key historical element of evangelicalism, and they correspond with Warner and Hunter's more recent sociological analyses of present day evangelicalism. Although Smith (2011) has recently used the term "biblicism" in a pejorative sense, Bebbington's original definition was simply "a particular regard for the Bible" (Bebbington, 1989, p. 2) which was evident in the lists above. Evangelicals vary in their interpretations of the Bible, and their emphases differ, such as whether to use the term "inerrancy," but the belief that the Bible itself is in some way the "word of God" and that regular Bible engagement is an integral part of what it means to be a Christian is deeply embedded in evangelicalism. Behind this idea is a corresponding, though largely unstated idea, that not regularly engaging scripture might be considered a kind of lapsing or failure. For example, when Malley asked evangelicals about their Bible reading, instead of offering straightforward responses, many felt the need to qualify their answers by saying that their reading had just recently dropped off or was not what it should be (Malley, 2004, p. 35). The importance of a regular practice of Bible reading is significant for Bible software, because some forms of Bible engagement such as Bible reading plans are heavily promoted in several digital Bible applications. These reading plans have embedded in them a sense of completion or failure, which may be tied to one's sense of religious duty and identity.

Regularly reading one's Bible is also a common subject of social conversation among evangelicals, and its importance can be seen in the name of evangelicals' primary religious

activity outside formal worship services—the “Bible Study” (Wuthnow, 1996). The Bible study setting is constructed not only for the actual study of the Bible but, as James Bielo has shown through extensive fieldwork, the discourse of small group Bible studies is also designed to reinforce the central importance of the Bible and being Biblically-based (Bielo, 2008b, 2009b). He notes that even when small group participants differ on the interpretation of a particular passage, they always conclude that the Bible itself is a trustworthy guide for life. These discussions about the role of the Bible that take place within the Bible study setting are a significant element in developing evangelical culture, and Bible study groups continue to be an important tool for socializing newcomers into evangelical communities (N. T. Ammerman, 1997). Guest has also shown that in church community groups that use labels other than “Bible study,” the Bible still plays an important role in their social lives and in the expectations of how the group’s beliefs are expressed (Guest, 2007, pp. 190-195).

These claims regarding the supremacy of the Bible among evangelical leaders and the importance of Bible study among the laity leads to an important question: Do evangelicals actually read the Bible regularly? According to researchers, they do. Pew reports that nearly two in three evangelicals (63%) “read scripture outside of religious services at least once a week.” This is almost double the Bible reading rate of the general public (35%) and more than double that of Mainline Protestant (30%), Orthodox (29%), and Roman Catholic (25%) Christians (Diamont, 2018). Similarly, when asked about their attitudes regarding the Bible, evangelicals (88%) report believing that the “Bible is the word of God” at much higher rates than Catholics (64%) or Mainline Protestants (62%). Evangelicals are also more likely to attend a weekly Bible study (44%) than Mainline Protestants (19%), Orthodox (18%), or Roman Catholics (17%).[14] This data from Pew corresponds with surveys from the evangelical

[14] Pew also notes that Jehovah’s Witnesses (88%) and Mormons (77%) read the Bible weekly at high rates than evangelicals (63%), and they also have stronger beliefs about the Bible as God’s word and attend weekly studies more often. Some evangelicals have sought to find more common ground with Mormons, although they also desire to remain distinctive (Mouw, 2012).

research firm LifeWay Research which found that people with evangelical beliefs reported reading the Bible daily (49%) at much higher rates than those without evangelical beliefs (16%) or those who identify as Protestant (36%) or Catholic (17%) (LifeWay Research, 2017).

It is important to note that in the United States, this data is highly racialized. Pew classifies African-American Christians as "historically black Protestant," and reports that this demographic reads the Bible at nearly the same rate (61%) as "evangelicals." They also believe the Bible is God's word (85%) and attend Bible study groups (44%) at rates very close to white evangelicals. The significance of this for the Bible software industry is that African-Americans are underrepresented in America's technology sector (Ascend Foundation Research, 2017). In fact, while I have met several minorities working in the Bible software and Christian technology spheres, the executives and developers I interviewed as part of this study all presented as white.

This survey data on the beliefs and practices of evangelicals reinforces the doctrinal assertions about the Bible and, together, they show that evangelicals have a high regard for the Bible, and that it plays an important role in their self-identity and sense of community. In the religious social shaping of technology approach, the importance of the Bible to evangelicals will be one of the key beliefs that will need to be considered as we examine how evangelicals react to new technology around the Bible. Tayna Lurhman addresses the significance of the Bible as a printed book when she writes, "Believers overcome the problem of presence by imagining that God is always there, and eventually they come to believe it. Does always carrying a Bible with one increase that sensation?" (Luhrmann, 2012, p. 131). If so, will carrying a phone with an app have the same sensation for evangelicals whose self-understanding is based on being a "people of the book"? To answer this question, we will now consider how evangelicals have historically approached technology.

Hopeful Attitude toward Technology

In some accounts, evangelicals are understood to be backward and culturally-resistant (Rosman, 2012, p. 4). This is in part because evangelicalism in America is often associated with conservative stances on political issues (Kyle, 2006, p. 167) as discussed above. And yet, this combative stance toward culture on some issues lives alongside an embrace of societal change in other areas (Kyle, 2017). Laughlin draws this theme together with evangelicalism's relationship with technology, "From the early days of radio through today, evangelicals have been early adopters of media technologies and have attempted to create a parallel culture that is the result of the twin and sometimes conflicting evangelical drives to retreat from and engage with popular culture" (Laughlin, 2018, pp. 24-25).

In this section, we will consider the ways evangelicals have tended to embrace media technology with a sense of hopefulness about its potential for accomplishing the mission of God. I will argue that evangelicals are aware of the potential downsides of technology, but that this is largely framed in terms of individual morality rather than structural concerns with warnings to avoid using technology for things like viewing pornography. Once these warnings have been given, evangelicals are drawn to the potential of media and technology both inside the walls of the church and for reaching those who do not yet share their faith. This orientation is characterized by the phrase, "Technology is just a neutral tool; what matters is how we use it." By adopting a "technological frame" of hope, evangelicals are able to advocate for the aggressive implementation of new media, and this is further buoyed by what we will see in the sections below on the evangelical embrace of entrepreneurialism and their pragmatic approach to outcomes.

In Campbell's work on the religious social shaping of technology, she points to John Ferre's taxonomy of attitudes religious people take toward technology (Campbell, 2010, p. 44). Ferre argues that they tend to think about technology in one of three ways: (1) conduit,

(2) mode of knowing, and (3) social institution (Ferré, 2003). These stances roughly correspond to the philosophical categories laid out in chapter one, where the conduit approach maps to instrumentalism, mode of knowing maps to determinism, and Ferre's social institution corresponds to Feinberg's call for critical approaches. Another similar taxonomy comes from Ian Barbour, who classifies views on technology along a spectrum of "optimism, pessimism, ambiguity" (Barbour, 1993). Here I have adopted Barbour's term "optimism" and given it a theologically inflected slant with the word "hopeful." In the classifications above, technology itself is seen as the giver of good things, but evangelicals would claim that God has given technology as one of the means of producing the better world for which they hope. Ferre's term "conduit" offers a helpful analogy for the evangelical approach to technology because it creates the image of a tube through which one can push either morally good things or morally evil things. The most important thing, according to many evangelicals, is the content one puts through the tube, not the tube itself. In other words, while some evangelicals take a negative stance on technology, most average users and many leaders take an instrumentalist (or conduit) view, and while some evangelical writers have offered more nuanced (ambiguous) views on technology, they ultimately advocate for its use in ministry and outreach. This is typified in the way Billy Graham explains his view of technology, "Like most technologies, television in itself is morally neutral; it is what we do with it, or fail to do with it, that makes the difference" (B. Graham, 2007, p. 432). Here we see the emphasis placed on "what we do" rather than on any inherent qualities in the technology itself, which Graham labels as neutral. This view was updated for the smartphone era in the National Association of Evangelical's magazine, in the issue directly following their discussion on how to define "evangelical":

> Technology connects us in ways we couldn't have imagined. And ironically, technology has also made it easier to disconnect from others. Like many things, technology cuts both ways depending on how it is used. Technology is

> not an isolated, abstract concept. Rather today's technology mirrors human nature — revealing both wholeness and brokenness (2018, p. 5).

Another NAE author explicitly invokes Barbour's category of optimism, connected it to the Great Commission (Matthew 28:18-20), "What we personally think about changes in society is secondary to the Great Commission work of reaching our contemporary culture … Let us minister from optimism" (McLane, 2018, p. 15). Another sets up two extremes of "becoming raging technophobes railing against the nefarious uses of technology, or enthusiastic tech-evangelists who extol the virtues and possibilities of all things shiny and electronic," before arguing for a "third way." But this third way includes recognizing that "Most things can be used for good or evil. Usually it all comes down to how you use it" (Hall, 2018, p. 19).

This optimistic bent was particularly strong in the twentieth century, as evangelicals embraced microphones and cars, radio and television, and later the Internet and mobile technology. As Roof writes, "Evangelicalism has long used up-to-date media and information technologies in its programming and recruitment efforts" (Roof, 1999, p. 25). In an article on the ministry of Back to the Bible, Balmer argued that "the alacrity with which evangelicals have embraced new forms of media, however, belies the popular stereotype that they are suspicious of innovation of technology. Nothing could be further from the truth, especially in the arena of communication technology, where evangelicals have been pioneers more often than naysayers… In the 20th century, evangelicals embraced electronic media with unabashed enthusiasm" (Balmer, 2001, p. 48). He also addressed some of the downsides that came with this embrace of technology—most notably televangelists who, "advanced the name-it-and-claim it … heresy" and preachers who "abandoned 19th-century evangelical activism … in favor of a conservatism virtually indistinguishable from the Republican Party"—but he argued that those with gospel fidelity, like Back to the Bible, make the trade-offs with technology worth the risk.

The evangelical magazine *Christianity Today* also saw itself within this careful but positive use of media when the editors of the magazine wrote, “evangelical Christians have been both media conservationists and media innovators. We love our leather-bound Bibles, yet eagerly use Biblegateway.com’s full text-search capabilities to compare 20 English translations… We were early adopters of radio when that technology began to draw American families together … We were early adopters of television … Billy Graham, our founder, understood the power of magazines to build community and identity” ("Media in motion: evangelicalism's mission and message outlast evolving technologies," 2006, p. 38). They go on to acknowledge that “technology’s blessings have unexpected side effects,” including the creation of “virtual Christianity” and fracturing local communities into special interest groups. But after addressing these downsides, they return to their mission and to the numbers, the billions of people who need to hear the gospel and who can be reached through technology.

Still, some evangelicals worried that this technologically-powered freedom could come at a cost. In a re-telling of the formation of the National Association of Evangelicals, Heather Gonzales traces the formation of independent evangelical institutions, churches, mission agencies, and colleges at the beginning of the twentieth century, citing technology as a key factor in their growth. But she goes on argue that “Lacking a central organizing body, the community centered around engaging personalities and independent institutions… At times they acted like rivals, weakening meaningful Christian witness” (H. Gonzalez, 2017, p. 20). It was in an attempt to bring unity among these groups while also filtering out those who might abuse the power of broadcast technology that Ockenga and others formed the NAE and other institutions like *Christianity Today* and Fuller Theological Seminary. This highlights a perpetual tension within evangelicalism where its independence from formal authority structures and entrepreneurial embrace of media sometimes enables the wrong kinds of

evangelicals to gain power, prompting others to create new institutions and begin the cycle again.

Other evangelicals have expressed deeper worries, not merely about the improper use of technology, but of the nature of technology itself. Although careful to avoid the label of Luddite or anti-technology, they do raise structural issues about how technology can reshape society even when it is used for good. For example, in the early computer era, some evangelicals attempted to signal early warnings about how hastily adopting technology could lead to a kind of technological thinking that would get backported into churches. Kenneth Wozniak, a bank technician who also wrote on theology, argued in 1985 that Christians needed to think beyond merely the usefulness of a technology to a congregation, but also about the ethics relating to issues like the value of persons, dependence on technology, and themes of control (Wozniak, 1985, p. 336). Similarly, Stephen Monsma, writing from the perspective of engineering, wrestled with the idea that technology is a God-given good and yet simultaneously value-laded. Contra Billy Graham, he argued that technology is "not neutral" (S. J. Monsma, 1986, pp. 3,24). As the Internet emerged, some evangelicals offered critical takes on technology that urged careful discernment in everything from the use of PowerPoint to cell phones (Schultze, 2002), while others drew on the work of Marshall McLuhan (Hipps, 2006, 2009) and Neil Postman (Gordon, 2009, 2010) to argue that technology might be having a stronger influence over the church's direction than most had thought. When streaming video and early forms of virtual reality became more widely available in the mid-2000s, some authors praised the new multi-site model as "revolutionary" (Surratt, Ligon, & Bird, 2006), and New Testament professor Douglas Estes argued that despite the potential downsides, the "SimChurch" was a worthwhile endeavor (Estes, 2009). But others like popular Reformed blogger Tim Challies countered that, despite his own vast reach online, face-to-face relationships should be paramount over technologically mediated

ones (Challies, 2011, p. 76). Others like Schuurman (2013), Byers (2014), and Gay (2018) contend that technology is part of what God is doing in the biblical story, but also call for careful discernment regarding technology's values and structures.

In the midst of these discussions that emphasize technology's goodness while debating its proper use, there have some evangelicals who display a less hopeful and more pessimistic view of technology. In his book *The Vanishing Evangelical*, former pastor Calvin Miller outlines the various causes he believes are responsible for the decline of evangelicalism, all of which are centered on an overindulgence of its cultural adaptability. "Rather than speaking to our culture with a unique, prophetic voice, we have adapted to the culture and lost our vitality" (C. Miller, 2013). For Miller, the adoption of technology—including websites, Facebook, PowerPoint, and posting sermons online—are a part of this unbiblical adaptation to culture which ultimately undermines the evangelical message. The problem with technology is not intrinsic to the technology itself Miller contends, but rather the connection between technology and wider culture that he sees himself positioned against. Miller's negative stance on technology, however, puts him in a small minority, and for people in the pew, their worries tend to be more practically minded. In a 2011 survey by Tyndale College in Ontario, Canada, 35% of respondents felt that church is "becoming too much about technology" and 21% of the churches reported discouraging reading the Bible electronically, but at the same time the biggest issues they faced regarding technology were inadequate budget (30.6%) and lack of volunteers (32.5%) ("Church and Technology: A Survey of Ontario Churches," 2011). Some of the participants mentioned the intergenerational issues that often arise with technological change, but the survey did not suggest that there were more central theological issues at stake.

So while some evangelicals have taken a more negative stance on technology, as a whole, they tend to have a hopeful attitude toward technology that is consistent with their long-

standing adoption of Enlightenment optimism. As Brekus writes, early evangelicals, "were fervent believers in progress who dreamed of a millennial age of peace and prosperity, but they denied that progress was possible without God's grace" (Brekus, 2013, p. 10). This ties in with Pew's findings that Americans today consider technology as the biggest improvement in their lives over the last fifty years (Straus, 2017). This potent brew of American culture and evangelical optimism came together in a recent issue of *Light*, the magazine for the Southern Baptist Convention's Ethics and Religious Liberty Council (ERLC), dedicated to considering technology. It contained articles addressing the economics of Bitcoin, the perils of social media, and the challenges of parenting digital natives, but its hopefulness regarding technology was also clearly evident in articles about how technology enabled faster Bible translation and how YouVersion has become "a God-ordained global movement" (Nicolet, 2018, p. 17). So, while evangelicals are not naïve to the negative side of technology, and therefore do not hold a purely optimistic, conduit, or instrumentalist approach, they draw on these views to fuel their hopefulness that God will ordain and work through their technology. As we will see in the following section, this approach to technology is strengthened by embracing entrepreneurial business practices.

Entrepreneurialism in Business and Ministry

A second, interrelated characteristic of evangelicalism is its embrace of an entrepreneurial spirit which can be seen across a range of evangelical activity, including a willingness to experiment with models of church leadership and worship styles, and an openness to creating corporations that mix religious values with business values. Unlike Roman Catholics or high church Protestant traditions which value preserving specific rituals that date back hundreds or thousands of years, evangelicals tend to shy away from such traditions, remain unaware of

them, or simply consider them unimportant.[15] Instead, evangelical leaders are fond of saying, "The methods may change, but the message stays the same," by which they mean that while their theology is staunchly historical (they uphold the "true church"), they are free to experiment with new types of ministries, new methods of worship, and new media and technology. This phrasing takes many forms such as, "The message of the gospel is unchanging, but we may change the ways in which we present it" (Stetzer, 2015) and "while the methods may change, the message must always stay the same," (Porter, 2015, p. 60), but the point is the same—the *evangel* (gospel) is fixed for evangelicals, but all options are on the table when it comes to sharing that message with others. Some evangelicals, especially those in the emerging church (Wigner, 2018), have also been known to reclaim and appropriate traditions of the past into church life when they feel it would best serve their constituents (Flory & Miller, 2008).

As we saw earlier in the history of evangelicalism, evangelicals have been characterized by a cultural flexibility that enables them to selectively incorporate societal trends into their ministries while remaining embattled against culture in other areas. In the early twentieth century, fundamentalists were known for their hostility toward almost anything from the outside culture, but neo-evangelicals distinguished themselves as those with more open to what was happening around them. They maintained this in part by the message/method distinction, which separates theology from practice and core beliefs from their practical application. This allowed them to position themselves against those whom they perceived as abandoning doctrinal fidelity or certain forms of "traditional" morality[16] while remaining open and flexible in the outward practice of worship, ministry, and evangelism. Against this

[15] Juzwik (2014) argues that evangelicals' use of the Bible is a kind of practice of its own.

[16] Younger evangelicals today appear to be less interested in issues of like sexuality and abortion and are more likely to be vocal about issues like immigration and climate change (Griswold, 2018).

backdrop, evangelicals have tended to thrive when they employ entrepreneurial techniques to build new ministries, churches, and outreach programs that proclaim an unchanging gospel.

This embrace of the entrepreneurial spirit is even more pronounced in the United States[17] where "pulling oneself up by the bootstraps" and "living the American dream" is part of a shared cultural myth about an individual's ability to build something from nothing. Though scholars like Tanner (2019) argue that Christianity offers a counterbalance to naked capitalism, Balmer writes that American evangelicalism is "consistent with the American ethos, [offering] a kind of spiritual upward mobility, a chance to improve your lot in the next world and also (according to the promises of some preachers) in this world as well" (Balmer, 1999, p. 11). Just as technology is considered to be neutral (or at least worth the tradeoffs), evangelicals tend to accept "capitalism as not just a neutral, value-free economic system, but one that is morally good" (Corbin, 2005, p. 346). And although not all American evangelicals are Calvinistic, the connection Weber found between hard work[18] and spiritual success remains deeply embedded in broader American Protestantism (Green, 1959). This takes a special form in evangelicalism, Bielo argues, because the "born again" transformation evangelicals experience is often extended into the secular business world where success is interpreted as the result of following Christ (Bielo, 2007, p. 326). Moreton offers a contemporary account of how Walmart's leaders employed an evangelical justification of free enterprise to control of its wages and thus maximize profits (Moreton, 2010). Connolly has argued that secular capitalism and evangelicalism bridge the sacred-secular divide through a shared ethos he calls the "evangelical-capitalist resonance machine" (Connolly, 2008, p. 48), in which religious beliefs like the free flow of the work of God find a

[17] Though it can be seen in other cultures such as Korea and Guatemala (Baldacchino, 2012; Berger, 2010).

[18] Wayne (1989) has demonstrated that today there remains a strong overlap between elements of the Protestant Work Ethic, such as individualism, asceticism, and industriousness, and new emerging values.

metaphorical resonance in capitalism's free flow of money.[19] However, Bailecki (2008) has shown that, when evangelicals discuss money (which is quite common in sermons and books), they sense a tension between their belief that material success is a sign of God's blessing and their desire to avoid falling into materialism. Even so, entrepreneurs are celebrated in American society for their risk taking, and Doughter and his colleagues (2013) found that they are as religious as the general public with nine of out ten being affiliated with a religious tradition, most commonly pro-business evangelical churches. Such businessmen have been a major influence on American life, and Kruse has argued that they were the primary drivers of mid-twentieth efforts century to solidify America's religious identity through initiatives such as adding the phrase "under God" to the Pledge of Allegiance and putting "In God We Trust" on coins (Kruse, 2015). Similarly, Lindsay traced the means by which a significant number of evangelicals have garnered positions of elite cultural power in not only the business world, but also in among politicians, intellectuals, and artists (Lindsay, 2007). These deep roots of entrepreneurialism in American business and religion continue to find expression both within evangelical churches and in the business people who attend them.

Scholars working in contexts outside the U.S. and Europe have also demonstrated connections between the Christian faith and the embrace of entrepreneurial practices. Gbadamosi (2015) explored the way business entrepreneurs from African-Caribbean ethnic backgrounds in the United Kingdom are "motivated and emboldened" by their Pentecostal faith, with some continuing to serve as bi-vocational pastors as they created new enterprises. Likewise, Cao (2008) found that some private business owners in China publicly credit their success to their faith in God and use their earnings to fund evangelical churches and ministries near their churches. But again this connection between faith and

[19] Connolly's initial examples (2005) are tied to the era of Left Behind and the Bush Cheney presidency, but the concept continues in the era of Jerry Falwell, Jr. and the Trump presidency.

entrepreneurialism appears to be especially pronounced in the U.S., with some scholar suggesting that one of the reasons the U.S.[20] was more resistant to secularization (Norris & Inglehart, 2011, pp. 3-82) than Europe (Callum G. Brown, 2001) was their embrace of religious entrepreneurialism. European churches have long been able to rely on tax revenue to fund their existence, but the American emphasis on the separation of church and state meant that U.S. churches did have this luxury. This forced American churches to be more experimental in their approach, which in turn led to a broader variety of choices for American churchgoers.[21]

In the early 1970s, Donald McGavran made several of these strategies explicit in his book *Understanding Church Growth* which integrates an evangelical theology of missions and evangelism with sociological research. His most well-known and most controversial argument is the "Homogeneous Unit Principle" (HUP), which claims that churches that target demographically similar people are more likely to grow.[22] Though HUP specifically has been criticized (DeYmaz, 2007; Fong, 1996), the church growth and planting movement continues. Today, among evangelicals, the "church planter"—a person who takes a risk, moving to a new city in hopes of building a thriving church from scratch—is seen in much the same light a business entrepreneur in broader American culture.[23] To support these endeavors, evangelicals have built church planting networks such as Acts 29, V3 Church Planting Movement, and the Association of Related Churches (ARC). Like tech incubators refining a new product, these networks help prospective church planters define a target market for their new church and then create a tailored church model that they hope will thrive among the

[20] Smith (2003) argues that secularization in the United States at the turn of the twentieth century was driven not by modernity itself, but by elite intellectual class.

[21] This line of reasoning draws on rational choice theory (RTC) as an alternative to secularization (Davie, 2013, pp. 67-89). However, other sociologists are critical rational choice theory for not being viable outside Christianity (Sharot, 2002).

[22] The often quoted version of this is, "[People] like to become Christians without crossing racial, linguistic or class barriers" (McGavran, 1970, p. 198).

[23] Patrick (2010) focuses on the importance of character: "The most critical human component of every church plant is the planter."

identified demographic group.[24] The podcast "Startup," which describes itself as "A show about what it's really like to start a business," featured a story of an Acts 29 church planter, justifying their detour into the church planting world by saying "It's a world remarkably parallel to the tech industry, with incubators, growth metrics and, well, angel investors" (Munnel, 2018). The series showed how the struggling startup church seamlessly blended traditional elements of an evangelical church such as preaching a conservative gospel, praying and fasting for God's guidance, and reaching out to the neighborhood, with practical touches including studying the demographics of the nearby residents, adjusting the placement of the church sign, and posting announcements on Facebook.

As we have seen, evangelicals in the business world attribute their success to their faith and pastors planting new churches blend the best of their faith with the latest information on how to build a successful business. Somewhere between creating a business and planting a church, evangelicals have also been remarkably successful at starting organizations that sell and promote products and ministries designed to appeal to believers and non-believers alike. Brown argues that "evangelical churches and businesses continue to mimic and use techniques found to be successful in the secular business world" including "modern advertising, promotion, and business techniques" (C. Brown, 2012) to sell music (P. Ward, 2005), books, apparel, and events. Some evangelicals have also begun to embrace the idea of social entrepreneurship, merging the concept of creating business for social good with church planting (Benesh, 2018). To help classify these different endeavors, evangelical author Andy Crouch created a five-fold taxonomy describing evangelical approaches to cultural goods: condemning, critiquing, copying, consuming, and creating (Crouch, 2013, pp. 68-72). In *condemning* and *critiquing*, evangelicals posture themselves against ideas and morality they

[24] In addition to these networks, many successful church planters have written books (McKinley, 2010; Payne, 2015; Searcy & Thomas, 2017) about how to replicate their success. These also include books designed to help the family of the church planter (Hoover, 2013).

find objectionable, but with *consuming*, evangelicals also find products from the culture around them they can embrace. Similar to Brown's comment on mimicking, Crouch argues that evangelicals are also adept at *copying*, by which he means embracing a product trend, such as a new musical style, baptizing it with Christian lyrics and a squeaky-clean image, and selling it within the vast network of evangelical stores and websites. Crouch believes that these four postures have their place, but his thesis is that evangelicals should want to change culture for the better and that they will only do so through *creating* something genuinely new, beautiful, and useful. In all five of Crouch's postures, we see evangelicals managing their relationship to culture, rejecting parts of it while also maintaining their proficiency in adopting what they find useful.

This resonance between entrepreneurs in the business world who are Christians and Christian ministers who embrace entrepreneurial techniques is an important element of what has made evangelicalism one of the largest religious groups in the U.S. It is also an important component of their frame regarding technology, because technology tends to be spoken of in terms of how advanced, progressive, and current it is. To successfully use technology, then, requires constant change and experimentation to which evangelicals, among all Christian groups, are uniquely suited. These traits come together in the Bible software industry, which is largely composed of evangelicals marrying their love of the Bible with their love of technology and business. This embrace of business practices can also be seen in the way they tend to judge the success of a new endeavor through the lens of pragmatism, to which we will now turn.

Pragmatism in Mission and Outcomes

Following a hopeful outlook on technology and the embrace of entrepreneurial practices, the third element that contributes to evangelicals' attraction to the digital Bible is their

adoption of what Monsma called "principled pragmatism" (S. V. Monsma, 1976).[25] As a philosophy of thinking, pragmatism tends to judge the goodness of an action based on its outcome, and at its worst can fall into the justification that "The ends justify the means." But in its common form, evangelical pragmatism is an outworking of the characteristic Bebbington identified as "activism," which emphasizes the importance of missionary and social efforts. Rather than wait for a perfect solution or an ideal partner, evangelical entrepreneurialism and pragmatism work together, allowing them to join forces and experiment until something works. This highlights two common elements of evangelical pragmatism: a willingness to partner with those who do not share all of their beliefs but do share common goals and an inclination to try solutions they think might work before figuring out all the details. Here again, the separation of message and methods comes into play, allowing evangelicals to prioritize the gospel message, but be open to how it is shared—as long as it works. Pragmatism also highlights that evangelicalism as a broad movement is composed of an array of different factions, reacting to each other and to the pluralistic culture around them, finding ways to work together to accomplish overlapping goals. This also shows that all three aspects of Hopeful Entrepreneurial Pragmatism are tightly integrated and interdependent. The evangelical's hopeful attitude toward technology is enabled not by ignoring the consequences of technology, but by a pragmatic focus on the final outcome enabled by quickly adapting to new entrepreneurial tactics and changes in the media landscape.

This is not to say that all evangelicals openly embrace pragmatism. In fact, some evangelicals write strongly against it, worrying that when pragmatism takes over, "theology now takes a back seat to methodology" (MacArthur, 2010, p. 27). Some have also made the

[25] Monsma's pragmatism was aimed at the political sphere, and he wrote before the Carter's election, cautioning evangelicals against the misuse of political power.

connection between pragmatism and essentially secular ways of being in the world. Writing in the wake of the first World War, Southern Agrarian poet Allan Tate suggested that one way of understanding secularism was as “the society that substitutes means for ends” (Tate, 1999, p. 6). For Tate, the classical religious and natural ends of humanity have been subverted by secularization, and this process has been sped up because “the age of technology multiplies the means, in the lack of anything better to do” (Tate, 1999, p. 10).[26] Drawing on Tate, theologian A. J. Conyers lamented that “we have gradually lost the vocabulary and syntax necessary for speaking meaningfully, even to our own children, about nonmaterial values, nonpragmatic affections, and aims in life that exceed life itself” (Conyers, 1998, p. 313). Conyers goes on the argue that when churches focus on techniques and technology, they are emphasizing means over ends, which reduces Christianity to an essentially secular way of thinking and being, concerned more with power than love and sounding more like psychology than gospel. Similarly, Nelson laments how pragmatic thinking has come to dominate the way Christians understand the inner workings and purpose of their faith. “Pragmatism runs rampant in American Christianity. If faith does not ‘work,’ it lacks value.” Alluding to Moralistic Therapeutic Deism, Nelson writes, “In recent decades, pragmatism has been recycled in the form of self-esteem doctrines, the therapeutic gospel, and the health-and-wealth message proclaimed by prosperity teachers” (P. K. Nelson, 2005, p. 80).[27] Similarly, Samuel Shultz critiques pragmatism on the grounds that its emphasis on efficiency leads to embracing things like printed gospel tracts that inevitably lead to a “truncated gospel” which he defines as “a pragmatic attempt to explain logically and efficiently how one becomes ‘saved’ and a follower of Jesus Christ the Lord” (Schutz, 2009,

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[26] Tate also felt that the radio and other communication technology negatively affected human love. “Communication that is not also communion is incomplete. We *use* communication; we *participate* in communion.” (emphasis original).

[27] Nelson’s critique is not centered on adopting cultural goods like technology, but rather on adopting attitudes about goals in life and the place of faith in achieving those goals.

p. 292). He cites Charles Finney and Dwight Moody as examples of those who pioneered the simple and practical approach to evangelism which was "driven by a characteristically American spirit of idealism and resolve to 'get the job done,'" and who optimized their presentations "to get as many decisions as possible."[28]

And yet, for all the problems with pragmatism and utilitarianism in evangelicalism, some have cautiously touted its virtue. Noll writes, "At first glance it may seem difficult to say anything good about the American tendency to let practical and pragmatic concerns dominate over concerns of principle" (Noll, 1982, p. 9). He critiques evangelical business persons who operate apart from any sense of ethics and evangelists who emotionally manipulate audiences in order to claim higher numbers. But then he pivots to praise pragmatism in certain cases: "The practicality of American evangelicals which I commend … consists in the selective subordination of differences in principle for the purpose of accomplishing pressing tasks in practice." As examples, he cites cooperative projects including the American Great Awakening revivals, the formation of missions boards, Christian education, and moral reforms. Noll is, of course, careful to point out that each of these had their flaws which shows that "pragmatism must not be allowed to reign without rival as Christians approach the world" (Noll, 1982, p. 10).

In the discussions of technology and entrepreneurialism above, we have already observed several examples where pragmatism played a role in evangelical decision making. In the following section, we will look at three additional examples of how pragmatism informs the way evangelicals approach problem solving. First, the nineteenth century missions movement serves as an example of evangelical willingness to work together with other Christians who do not align doctrinally for the common goal of evangelism. Second, evangelical political

[28] By "decision," Shultz means that a person who hears or reads a simplified gospel presentation will pray a make a "decision" to become a Christian which happens when he or she prays a "sinner's prayer" which results in an evangelical "conversion."

involvement can serve as a counter example where pragmatism runs amok, and the means (political parties and candidates) undermine the ends. Finally, the multisite megachurch movement will serve as an example of all three aspects of Hopeful Entrepreneurial Pragmatism that parallels the emergence of Bible software.

Missions Movement

In a paper given to the Evangelical Theological Society, John Mark Hicks argued that although the Church Growth Movement (Towns & McIntosh, 2004) had its excesses and downsides, this did not mean that evangelicals should completely abandon pragmatism. He went on to argue that the book of Acts includes repeated references to numerical growth and examples of pragmatic decision-making such as Paul's use of Greek ideas in his Areopagus speech (Acts 17). In his conclusion, he writes, "Wherever the gospel is proclaimed, despite the reservations we might have about the pragmatism, rationalism, or rhetoric of some of the methods, let us rejoice that: Christ is preached" (Hicks, 1995).

This reasoning, while rarely so openly articulated, drove much of the Christian missions movement of the nineteenth century where the outcome of the mission was prioritized over theological differences. Hilborn uses the term "pan-evangelical" to describe the broad coalitions of diverse evangelical traditions that united under the rubric of action rather than doctrine (Hillborn, 2004, p. 80). Often this action, Hilborn argues, is directed toward missionary endeavors in which many different churches and denominations cooperate toward a shared goal of bringing the gospel and Bibles to people who are often referred to as "unreached people groups." However, this cooperation required that these evangelical groups self-consciously deemphasize doctrinal differences in favor of ecumenical pragmatism. Hinson traces ecumenical pragmatism back to William Carey, a pioneering missionary to India in the late eighteen and early nineteen centuries. He argues that Carey's influence and approach are still reflected in his Baptists successors, particularly the Southern Baptist

Convention which he cites for “the unapologetic bluntness of their pragmatism” (E. G. Hinson, 1980, p. 73) regarding the denominational groups with which they choose to associate. When Carey avoided partnerships, particularly with Roman Catholic missionaries, Hinson argues that Carey did so less because of theological differences such as baptism and more because of the Baptist emphasis on volunteerism over ecclesiastical hierarchy. This meant that he favored working with groups he deemed less authoritarian in spite of theological differences (E. G. Hinson, 1980, p. 82). In other words, his partnership choices were not principally rooted in terms of doctrinal alignment, but on how successful he thought the partnership would be.

Carey studied the missionary work of the previous generation including John Wesley, about whom Tomkins writes, “Whether he admitted it or not, he was a pragmatist and questions about lay sacraments, separation from the Church and women preachers were ultimately decided by what worked best” (Tomkins, 2003, p. 160). Wesley also embraced the “humane use” of the technology of his day, including advanced medical care for the poor, the printing press for the transmission of his ideas and music, and modern instruments of the time (Guerrant, 2015). This impulse to “get on with it” and figure out what works continues within Methodism and throughout evangelicalism today. Unfortunately, the motivation to work together across doctrinal lines also meant that the missions movement was often complicit in European colonialism and imperialism (Page & Sonnenburg, 2003). Wuthnow argues that this connection continues in the “globalization of American Christianity” driven by “the nation’s wider participation in the international economic, political, and cultural community” (Wuthnow, 2009, p. 2).

The pragmatic impulse in the context of missions is also key to the evangelical push to develop Bible software applications. Sharing the gospel through the Bible is a core component of evangelicalism, and just as early missionaries embraced ships, the printing

press, and other Christians with different beliefs, Bible software developers have fully immersed themselves in the technology industry, partnering with companies like Apple and Google, offering Bible translations and resources from non-evangelical denominations, all in service of the greater mission of reaching people with the Bible. For example, YouVersion has a wide variety of partnerships where it downplays theological difference in favor of a common focus on the Bible. Faithlife, too, is free to sell products and books from a variety of theological perspectives, as long the central purpose of the software is Biblical interaction.

Political Engagement

If the missions movement serves as a largely positive[29] example of evangelical pragmatism, evangelical American political engagement has not fared quite as well, especially when evangelicals align themselves with leaders and parties that appear to be at odds with their stated beliefs. What began with evangelicals aligning themselves with Ronald Reagan, whose vague faith was not evangelical (G. S. Smith, 2006, pp. 325-264), seems to have continued in a new form in the case of Donald Trump. For some, the Trump election is evidence that evangelicalism is indeed merely a political force, while other evangelical leaders have argued that those who voted for Trump do not represent "true evangelicalism." Here, I will continue the argument that evangelicalism is simultaneously a set of theological commitments and a posture toward the broader culture that includes the pragmatic embrace of elements they feel will help them.

The example of Trump's election is instructive because it offers a clear case in which evangelicals adapted their views to accommodate a candidate. In 2011, the Public Religion Research Institute found that of all the religious groups, white evangelical had the least confidence in immoral leaders with only 30% agreeing that immoral conduct conducted in

[29] As mentioned above there are many angles of critique on the missions movement, especially regarding its connection to colonialism. More recently, Haynes (2018) argues that short term mission trips are often setup for the benefit of the those who are going rather than those who are being visited.

private did not prevent governing officials from fulfilling their duties in public. But five years later, just one month before the 2016 U.S. election, when PRRI asked the same question, the percentage of white evangelical Americans who could separate private and public conduct more than doubled from 30% to 72%. During this same period, other religious groups, including Catholics and White Mainline Protestants, as well as Americans overall also reported being less likely to believe that personal immorality disqualified a candidate or elected official, but no other group was as forgiving as white evangelicals ("Clinton maintains double-digit (51% vs. 36%) lead over Trump," 2016). Edsall offered the following stark assessment of the shift: “What happened in the interim? The answer is obvious: the advent of Donald Trump” (Edsall, 2017). Exit polls showing that white evangelical voters supporting Trump by an overwhelming 81% (the highest percentage of support for any Republican presidential candidate in recent history) appear to confirm Edsall’s thesis. So why would evangelicals, ostensibly committed to traditional morality, vote for a candidate that Trip Gabriel described as, “A twice-divorced candidate who has flaunted his adultery, praised Planned Parenthood and admitted to never asking for God’s forgiveness” (G. A. Smith & Martínez, 2016)? Put in terms of pragmatism, what is the end that evangelicals wanted to achieve which would cause them to change their views on a leader’s morality as a means to that end?

One possible answer is American evangelicals are actually racist,[30] sexist,[31] homophobic,[32] xenophobic,[33] power-loving,[34] pornography-using,[35] serial divorcers, and that Donald Trump is a reflection of their true values, not a pragmatic means to an end, but someone they whole-heartedly endorse. While some evangelical leaders have spoken openly against Trump, his lifestyle, and his politics,[36] and groups of evangelicals have gathered to discuss the problems he has created for their faith (Bailey, 2018), the statements of several prominent evangelical leaders and the history of evangelical political involvement suggests there is some truth to this. For example, Jerry Falwell, Jr., president of the evangelical Liberty University, lent credence to the consistency between Trump and evangelicals when he proclaimed, "I think evangelicals have found their dream president."[37] He even posted a picture of himself with his wife and Trump in front of one of Trump's Playboy magazine covers,[38] and, when asked if Trump could do anything to cause Falwell to question his presidency, he answered, "No" (Helm, 2019). Dozens of other prominent evangelical leaders

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[30] Researchers have shown that many churches perpetuate racial segregation by "executing what we term 'race tests,' on incoming people of color" (Bracey II & Moore, 2017, p. 282).

[31] The "ChurchToo" movement arose in response to sexual abuse within the Christian churches. (Kivi, 2018). During this time there were several evangelical sex abuse scandals including former youth pastor Andy Savage (Shellnut, 2018).

[32] Evangelical range from supporting gay rights in the 1980s to continued anti-homosexual rhetoric and practices after the U.S. recognized gay marriage (Hardesty, 1986; Thomas & Whitehead, 2015).

[33] Stetzer (2018) urges evangelicals not to fall for Trump's rhetoric about immigration.

[34] John MacArthur's university has been accused by accreditors of abuses of power (Kelderman & Bauman, 2018).

[35] Perry (2019) argues that evangelicals use pornography at only slightly lower rates than the rest of the general public, but that this causes them greater distress because of their moral commitments.

[36] Notable evangelicals who have spoken and written against Donald Trump include organizations like *Christianity Today* magazine and The Gospel Coalition and individuals like Albert Mohler of Southern Baptist Theological Seminary and Russell Moore of the Ethics and Religious Liberty Commission ("The non-Trump evangelicals," 2018).

[37] Jerry Falwell Jr.: Moderate Republicans make my blood boil. (2017, April 29). Retrieved from http://video.foxnews.com/v/5416587832001/.

[38] JerryFallwellJr. (2016, June 21). Honored to introduce @realDonaldTrump at religious leader summit in NYC today! He did incredible job! @beckifalwell [Tweet]. https://twitter.com/JerryFalwellJr/status/745325187776811008.

openly embraced him as a political, if not spiritual, ally without denouncing his immorality or racism.[39]

Rather than see this as an inconsistency, some scholars have suggested that the embrace of racist leaders is consistent with a darker thread in American evangelicalism's political engagement. Dudley argues that, contrary to the popular belief that Falwell, Sr. formed the Religious Right in response to Roe v. Wade, "The evangelical Right, however, was not as concerned about abortion initially as it was with defending racially segregated schools" (Dudley, 2011, p. 46). Robert Jones, head of the Public Religion Research Institute, agrees saying, "If you are looking for the core animating spark of the Christian-right movement, it's not abortion but private Christian universities not being able to have laws against interracial dating" (Burleigh, 2017). Carter denied Falwell and Bob Jones's request to remain segregated, leading them to switch their allegiance to Reagan (Balmer, 2014). Reagan's administration initially moved to support their cases, but by 1982 they retreated in response to an outcry from civil rights groups (Capps, 1990, p. 93). Their association with Reagan, then, did not pay off in terms of preserving segregation, but by then they had aligned themselves with Republican economic policies and Reagan had steered the Republican Party toward evangelical priorities like overturning Roe v. Wade.

This long-standing connection between evangelical political allegiances and some of Trump's worst inclinations leads us to conclude that there is at least a portion of evangelicals who directly identify with his causes and embrace his racist rhetoric. But the diversity within evangelicalism also allows for a group of evangelicals who claim not to agree with Trump's personal lifestyle or all of his views, but who nevertheless voted for him. Brody and Lamb (2018) explore Trump's faith upbringing and suggest that he intentionally supported

[39] These include Billy Graham's son Franklin Graham, James Dobson, founder of Focus on the Family, Ronnie Floyd, former president of the Southern Baptist Convention, Ralph Reed, founder of the Faith and Freedom Coalition, and author and commentator Eric Metaxas (Shellnut & Zylstra, 2016).

evangelical positions he did not hold in order to gain their support. Conservative commentator Hugh Hewitt argued that the evangelicals who supported Trump also did so because of their commitment to religious freedom against the onslaught of secularism, which they saw as personified in Trump's opponent Hillary Clinton. Citing both evangelicals and conservative Roman Catholics, Hewitt writes that, "Many people of faith are convinced that their ability to believe, proclaim and practice their genuine faith convictions is in danger not just of ridicule but also of punishment" (Hewitt, 2017). The logic, then, was that the only way to retain the right to exercise their faith was to ensure conservative Supreme Court Justices were appointed, and the only way to achieve this was to vote for a candidate who promised to appoint such judges. Unlike Falwell and Graham who recast Trump as a moral man, these evangelicals justified their choice by saying that they knew he was immoral but that they were trying to choose a strong leader, not a "pastor" (Gabriel, 2016). This pragmatic approach bore its first fruits almost immediately when Trump appointed Neil Gorsuch to the Supreme Court. In response, evangelical pastor Robert Jeffress tweeted, "Honored to serve @POTUS on his Faith Initiative Council. He has done more in 6 mo. to protect religious liberty than any pres. in history."[40] Months after that, the Trump administration provided new exceptions to religious organizations who objected to providing birth control and abortion in their health care plans (Pear, 2017). And yet, while these evangelical leaders supported Trump for the issues Hewitt motioned—abortion, Supreme Court judges, and religious liberty—a survey of white evangelicals showed that these issues were actually low on their list, well under the economy, national security, and immigration (Renaud, 2017). In other words, many evangelicals changed their moral standards, not for religious reasons that they felt were important to the common good, but because they felt he could protect their personal status and economic standing.

[40] robertjeffress. (2017, August 18). [Tweet]. https://twitter.com/robertjeffress/status/898733278215254016.

Regardless of the reason, however, this bargain appears to have cost evangelicals in terms of their larger stated value—sharing the gospel—with some pundits claiming to reject Christianity because of the evangelical alignment with Trump (Maxwell, 2017). There are also signs that some evangelicals have begun to judge Trump as an ineffective leader, with polls showing that some of them are withdrawing their support (Montanaro, 2019). Although much remains to be seen about the Trump presidency, his election may also indicate that American evangelical pragmatism has evolved into a more cynical and instrumentalist orientation toward politics than that which originated with Carter and Reagan. What began with evangelicals holding fast to a core message but remaining flexible on the methods appears to have shifted such that evangelicals are even willing to compromise on and reprioritize elements of the core message provided they see some perceived benefit.[41]

All of this might appear to indicate that American evangelicalism is hopelessly confused about morality and politics. But for the purposes of this work, we can draw several important conclusions. First, American evangelicalism is not monolithic. In the missions movement, different evangelical groups worked together for the common cause of the evangelism. In the case of Trump, 19% of white evangelical voters voted against him, and of the 81% voted for him, they had different reasons for doing so, ranging from religious liberty and anti-Hillary votes to outright racism and economic preservation. This leads to a second point that the Trump election serves as a paradigmatic expression of evangelicalism's cultural adaptability and pragmatic approach to issues central to their faith. That is, for all the evangelicals who voted for Trump—those who openly embraced his rhetoric, those who only voted for him for religious reasons, and those who vote for him for other policy reasons—they saw him as a means to a greater end that they desired. In this sense, the Trump election has parallels to

[41] I am indebted to my advisor Mathew Guest for pointing out the evolution of pragmatism toward instrumentalism and the way in which Trump himself models this instrumentalism by appropriating evangelical language, deliberately lying, and presenting things in a way that serves his own self-interests.

evangelical groups partnering with other churches and ministry groups who have different beliefs but who shared a common goal of missionary evangelism. However, this transaction serves a negative example because it potentially undermines other evangelical goals such as credibly sharing the gospel at home and abroad. And yet, it stems from the same animating spark that allowed evangelical programmers to embrace the computer and the smartphone, despite their downsides, because of their potential to changes lives and serve their goals.

Multisite Movement

One final example of the way technology, entrepreneurialism, and pragmatism work together comes in the multisite model of evangelical churches. In the late 1990s, as video conferencing systems became more reliable ways to connect people at two physical locations, some churches tried using the technology to transmit Sunday morning sermons from one main location to a series of satellite locations. One of the first documented cases took place in 1998, when the leaders of North Coast Church near San Diego, California found that more visitors were coming to their church than their main sanctuary could hold. Rather than building another, larger worship center or adding more services, they decided to try creating “an alternative worship venue” on the same campus ("Interview with Larry Osborn," 2005). Over time, they continued to expand these venues to accommodate different worship style preferences, and eventually they experimented with new venues that were geographically separated from the main campus, planting new campuses in neighborhoods where groups of their congregants lived. Seacoast Church in Mount Pleasant, South Carolina faced a similar situation in 2002 when their proposal to expand their existing building was rejected by the city. Feeling as though they were out of options, they decided to experiment and try renting space in a nearby shopping center where they would offer live worship music followed by a recorded sermon (Smietana, 2005). Their congregants responded positively and, although the recorded sermon was less than ideal, they viewed it as a better outcome than being cramped

in a building that could not accommodate all the worshippers. Seacoast, which is affiliated with the ARC church planting network, continued to expand its venues and upgrade its technology, and today it has fourteen campuses including a fully online church.[42]

Other churches launched similar experiments and, as of 2012, there were more than 8,000 multisite churches in the U.S. (Chaves & Eagle, 2015) with nearly one in ten U.S. Protestants attending a multisite church (Banks, 2014). Today, there are books (K. Davis, 2015; House & Allison, 2017; Surratt et al., 2006), conferences, and resources (Bird, 2014) dedicated to helping churches expand using multisite technology and techniques. But in the cases of North Coast and Seacoast, neither church appears to have set out to create the multisite phenomenon, nor did they anticipate the changes it would bring. Instead, they saw themselves as merely responding to the needs of their people, and in doing so, they were employing what we are calling Hopeful Entrepreneurial Pragmatism. They recognized that a pre-recorded sermon has its downsides and limitations, but felt that the creative use of technology would allow them to reach more people at a lower cost than building ever larger buildings. The emergence of multisite churches was enabled by a hopeful attitude toward technology, an entrepreneurial spirit, and a pragmatic decision-making process.

The multisite phenomenon also demonstrates that over time some evangelicals reevaluate their previous pragmatic choices based on conflicts they detect between their values and the means they employ. In recent years, some of the churches who pioneered the multisite approach have begun to reverse course and turn their satellites into stand-alone local churches. Mars Hill Church, the multisite church founded by Mark Driscoll in the Pacific Northwest, began a process of defederating its network of churches after Driscoll was asked to resign (Shellnut & Lee, 2015). Other churches have chosen to stop using streaming sermons after reconsidering the alignment of their values and the values of the technology.

[42] Seacoast Church. (n.d.). Retrieved December 15, 2018, from https://www.seacoast.org/.

The Dallas, Texas based multisite megachurch The Village Church, led by Matt Chandler, once had as many as six campuses all of which used a combination of local teaching and streaming video from Chandler from the central campus. In 2015, they chose to spin off one location into a standalone church, and in 2017, they announced plans to do so with the remaining campuses (Shellnut, 2017b). Similarly, upon Tim Keller's retirement from Redeemer Presbyterian Church, the evangelical megachurch he founded in Manhattan, New York, the church has decided to split into three distinct congregations that "will remain collegial and still partner together for programs, but will officially be their own congregations with their own leaders and elders" (Shellnut, 2017c). These choices to back away from a technology when it conflicts with their broader values demonstrate the principle from SCOT and RSST that the technological negotiation process is ongoing and that technological adoption is not inevitable in society or in the evangelical church. And yet many American evangelical churches continue to embrace the multisite model, including Life.Church the church responsible for YouVersion, one of the most successful digital Bible applications in the mobile era.

Biblically-Focused, Hopeful Entrepreneurial Pragmatism

In describing the common characteristics of evangelicals in North Atlantic societies at the turn of the twentieth century, Noll outlined five basic characteristics, which summarize some of what we have observed and which point toward the way evangelicals have approached the digital Bible. First, he notes that evangelicals "accentuated the historic Protestant attachment to Scripture" and second, that they had a "shared conviction that true religion required the active experience of God." Conceived together, Noll calls this "biblical experientialism" (or "experiential biblicism") to which he adds three more characteristics including the rejection of all inherited institutions as inferior to scripture, being "extraordinarily flexible in relation to principles concerning intellection, political, social, and economic life," and regularly

practicing "discipline" (Noll, 2010, pp. 29-30). In other publications, Noll summarizes these by calling American evangelicalism a form of "culturally adaptive biblical experientialism" (Noll, 2001, p. 2). If Noll is correct, then the evangelical emphasis on cultural adaptability and its deep connection with the Bible combine almost perfectly in the creation of Bible software. As we will see, the hope-filled willingness to experiment and try new cultural goods like technology coupled with an interest in keeping the Bible the central object of faith are both manifest in the creation and use of digital Bibles. In addition, Noll's emphasis on the experiential nature of evangelical faith has found new meaning in the era of mobile devices, where Christian and non-Christian alike carry around phones filled with apps that offer new experiences and regularly notify their users about their behavior, including their Bible reading. Together, the evangelical emphasis on the supremacy of the Bible and their Hopeful Entrepreneurial Pragmatism formed a fertile ground for the creation of the Bible software industry in the early 1980s.

CHAPTER 4:

FOUR WAVES OF BIBLE SOFTWARE DEVELOPMENT

In an article considering whether or not pastors and congregants should use digital Bibles in worship, Bishop David Oginde of the Nairobi Pentecostal Church Valley Road said,

> The church is called upon to speak to society and it has to be relevant. Wherever society goes, the church goes too because it can not afford to be left behind. That is why it (the Bible) has been digitized… The message in the Bible is still the same, only that the means of conveying the message has changed (Odenyo, 2018).

His words neatly summarize the findings in the previous chapter about evangelicalism's relationship to changes in the culture around them and their attitudes toward technological change in particular. We saw that evangelicals have historically sought to preserve their conservative emphasis on the Bible while also embracing modern technology, such as radio, television, and audio amplification, through decentralized but interconnected groups of entrepreneurial leaders, churches, and ministries. In this chapter, we will look more specifically into how Hopeful Entrepreneurial Pragmatism contributed to the emergence of the commercial digital Bible industry. Similar to the four waves Gutjahr (2018) identified in the American printed Bible industry,[1] I will argue that the digital Bible has undergone four waves of development: (1) Pre-Consumer Academic Era, (2) Desktop Pastoral Era, (3) Popular Internet Era, (4) Mobile App Era, with a fifth wave emerging today, the Bible as a service. The three companies that will be examined in more detail in the next chapter, Logos Bible Software, BibleGateway.com, and YouVersion's Bible App represent the second, third, and fourth wave respectively.

[1] These are (1) First Wave: American independence to the 1820s, using early print presses from England, (2) Second Wave: 1820s to 1870s with advances in stereotyping, (3) Third Wave: 1870s to 1980s which brought many new translations, (4) Four Wave: 1980s and beyond when Bible publishing became digitized.

In each of these eras, we will briefly consider the technological changes that made new kinds of Bible software possible, examine several representative companies and products in the era, and draw conclusions about how evangelicals negotiated technological change in that era and how Bible software influenced the behavior of ordinary Christian readers. An examination of these waves will show several significant trends. First, while evangelicals were not active during the first wave of academic projects, their commitment to the Bible and their HEP outlook on technology led them to dominate the field beginning in the 1980s with the arrival of personal home computers. Second, there was a progression in the development of Bible software from applications designed for academic study, toward desktop resources for pastoral work, and then toward online and mobile software for ordinary Christians readers. Third, the most commercially successful Bible applications were created by software developers whose evangelically-oriented interest in scripture led them to develop their own Bible applications and form companies that were interconnected with evangelical institutions and ministries. Finally, as more evangelicals became involved in creating and using Bible software, the functionality and features of applications tended to reflect an evangelical outlook on the purpose and meaning of scripture.

The Pre-Consumer Academic Era (1950s–1970s)

The earliest applications of computers to biblical texts came long before computers had screens on which they could display words or keyboards that a person could use to interact and explore the data. In this era, which begins with the first electronic computers in the 1950s and extends through the 1970s, scholars experimented with the early computers, using them to analyze biblical texts and to produce associated materials such as concordances at much faster rates than would have been possible by hand. As the technology evolved, scholars found ways to employ computers as a part of their arguments in academic research. Neo-evangelicals were not part of this initial wave of computer Bible projects, but toward the end

of the 1970s, some evangelical scholars and software developers began their first forays into creating Bible software.

The Emergence of the Computer and Biblical Data Tools

Computers, as we know them today, have their origins in the 1930s, when mathematicians, engineers, and physicists began laying the groundwork for electronic digital computing (Turing, 1936). By the late 1930s and early 1940s, the “first electronic digital computer,” the Atanasoff-Berry Computer (ABC) and the first “fully automated and program-controlled computer” (Trautman, 1994), the Z3 had been created, but these machines could not be reprogrammed to perform new tasks. Then, in the mid 1940s, concurrent with the emergence of neo-evangelicalism, several new projects offered advanced programming such as Eckert and Mauchly’s ENIAC, the world’s first “fully electronic computer capable of general programming and use” (McCartney, 1999) and the Universal Automatic Computer (UNIVAC 1) which gained national attention when an American television network used it to predict the outcome of the 1952 U.S. presidential election (Lukoff, 1979, pp. 127-131). These machines were primarily used in the military and financial sectors, but some scholars saw potential applications in the humanities, particularly in the generation of indexes of longer texts like Aquinas’s *Summa Theologica* (Jones, 2016) and the Bible.

The earliest use of computers for biblical study came from Merrill Parvis at the University of Chicago, who pioneered the use of automation in textual criticism. In his 1952 experiment, he compared fifty manuscripts of a single verse in Luke using IBM punch cards (Burch, 1965). Similarly, the Reverend John Ellison was employed by the American Philosophical society to use computers to analyze Gospel texts ("According to Mark IV," 1954). When the Revised Standard Version (RSV) of the Bible was published in 1952, Ellison set out to create “the first biblical concordance produced by a computer” (Harbin,

1998, p. 107). According to Deloris Burton, a chronicler of many early computational Bible projects, “Ellison, who deplored the idea that scholars with two or three doctoral degrees apiece should sit around sorting words, believed that the necessary concordance could and should be produced by a computer” (Burton, 1981, p. 6). Hindly offered this account of the magnitude of the project: “Rand’s UNIVAC I computer, using 480 pounds of cards and 80 miles of tape, compiled the concordance in 400 hours. The resulting book—the first computerized concordance of the Bible—featured 300,000 entries and ran 2,157 pages” (Hindley, 2013). After the generation of the data was complete, it took another two years to typeset the concordance. It was finally released in 1957, and popular publications praised the “massive job” ("Bible labor of years is done in 400 hours," 1957). By today’s standards, this was rather slow, but it represented an enormous leap from the thirty years it took James Strong to produce his *Exhaustive Concordance of the Bible* in 1890.

Computers for Academic Research

Through the late 1950s and 1960s, scholars continued to employ computers to build concordances, turning their sites toward other texts related to the Bible such as the Dead Sea Scrolls which brought new challenges including working with right-to-left languages like Hebrew. As more universities purchased computers, scholars expanded on Parvis’s work and created new types of research, including statistical analysis of biblical texts. Perhaps the most important of these came from New Testament scholar Andrew Morton, who wrote a series called “The Computer Bible,” the first of which was the *Critical Concordance to the Synoptic Gospels* published in 1969. But Morton may be best remembered for his controversial 1963 article published in the London *Observer* called “A Computer Challenges the Church” which would lead him to be considered “One of the most prolific and long-term contributors to the field of statistical authorship determination” (O’Donnell, 1999). In the article, he made the claim that one could prove through computational analysis that the apostle Paul could only

have written five of the thirteen epistles which bear the name "Paul" in the introduction.[2] In the years that followed, Morton continued to perform new computational analysis and other scholars, including Ellison himself (1965), challenged Morton's conclusions and created new computational models to counter his claims (Dinwoodie, 1965; Goodwin, 1969; G. Hinson, 1965; Ross, 1965).

The computational study of the Bible continued into the 1980s under Robert Kraft, professor of early Christianity and Judaism at the University of Pennsylvania, whom Siker calls "one of the most significant pioneers in computer applications for the Bible" (Siker, 2017, p. 53). Siker argues that Kraft is emblematic of scholars who were less concerned with interacting with the canonical text of the Bible and more with "exploding the boundaries of the canonical Bible by digitizing not only the Bible but also hundreds of non-canonical writings from the same general era for historical and literary analysis" (Siker, 2017, p. 60). Kraft, along with several collaborators, founded the International Organization for Septuagint and Cognate Studies (IOSCS) which produced *Computer Assisted Tools for Septuagint Studies (CATSS)* and other projects designed for scholars and linguists.

Evangelicals were conspicuously absent from these early academic projects, perhaps because scholars like Morton and Kraft often argued for views of Bible that were not compatible with their own. But where the fundamentalists of the early twentieth century might have stayed away from the digital Bible, by the 1970s, some conservative scholars raised under neo-evangelicalism and operating under Hopeful Entrepreneurial Pragmatism began to join in and create new digital Bible projects. Francis Ian Andersen[3] and Dean Forbes, for example, transcribed the text of the Leningrad Codex of the Hebrew Bible and

[2] Morton argued that his computationally-derived linguistic analyses which looked at the frequency of words like *kai* ("and") and *de* ("but") showed that only Romans, Galatians, Philemon, and the Corinthian letters bore a distinct enough authorial style to be attributed to a single author.

[3] Andersen taught at Fuller Theological Seminary in the 1990s. Biography of Francis Andersen. (n.d.). Retrieved September 28, 2016, from http://www.aiarch.org.au/fellows

created a linguistic database of all the grammatical segments and clauses in the Old Testament (Eyland, 1987). In 1976, the GRAMCORD Institute was founded to create tools for computer-assisted analysis of Biblical languages, and though it began at Indiana University, it was later hosted at Trinity Evangelical Divinity School by evangelical New Testament scholar D.A. Carson and eventually moved near Multnomah Graduate School under Paul A. Miller.[4] Initially, many of the software projects developed at GRAMCORD were designed to create resources such as the *A Syntactical Concordance of the Greek New Testament*, but later GRAMCORD began to develop software that could be used by those learning Greek and Hebrew. Through the 1980s and 1990s, GRAMCORD continued to develop exegetical software that was well received (Robert W. Klein, 1997; Robinson, 1996). This represented a shift toward the end of this era from Bible software *as* scholarship toward Bible software *for* scholarship and study. And, as a project led by evangelicals, GRAMCORD also signaled a shift toward more evangelicals taking on Bible software projects.

Summary of the Pre-Consumer Era

For our purposes, there are two primary points of significance to observe about the work of Ellison, Morton, Kraft, and others who found ways to use computers with the Bible. First, these early adopters were not evangelicals, but instead came from a mixture of Christian traditions: Busa was a Catholic priest, Ellison an Anglican, Kraft a former evangelical.[5] Second, the nature of their work was not to interact or read the text of the Bible directly, but to use computers in service of some other end such as producing a concordance, testing a theory that could not be calculated by hand, or comparing texts. Their work was primarily for

[4] Gramcord. What is The GRAMCORD Institute? (n.d.). Retrieved October 3, 2016, from http://www.gramcord.org/whatis.htm

[5] Though Kraft attended the evangelical Wheaton College, he would later describe himself as a "progressive Christian" in a video. Robert A. Kraft on Progressive Christianity. (2012). Retrieved from https://www.youtube.com/watch?v=F5UxVvUVRu0

the benefit of the academy, and because computers were not yet available to purchase for home usage, their work went largely unnoticed, or at least unusable, by the common churchgoer. However, with the advent of the personal computer in the late 1970s, we will observe these trajectories shifting. Evangelicals would begin to create the majority of desktop software, and they would design it to be used by pastors and seminarians for their church work.

The Desktop Pastoral[6] Era (1980 onward)

In the late 1970s and early 1980s, scholars would continue to use computers for their academic work, but the advent of the personal computer created an opportunity for Bible software to enter church offices and homes. One of the first consumer computers was the MITS Altair 8800, released in 1975 as a buildable kit, and that same year, Bill Gates and Paul Allen formed Microsoft to create software for the Altair. The following year, in 1976, Steve Jobs and Steve Wozniak released the first Apple I, which came preassembled, representing another step in making computers more accessible for the average consumer. A year later, several more companies released home computers, including Apple's updated Apple II, Radio Shack's TRS-80, and Commodore's PET (Personal Electronic Transactor), and thus the era of the personal computer had begun in earnest.

This created an opportunity for Christian engineers to combine their professional work with their interest in the Bible. While the Bible software of the 1970s had been created by academics with a particular set of research questions in mind, the new wave of applications in the 1980s were made by technologists and hobbyists, who shared overlapping attractions to emerging technology and the Bible, and for whom creating a Bible application was an interesting challenge. For example, Phillip Kellingley, an ordinand with an interest in

[6] Here, the term "pastoral" is used to describe software designed to be used by church pastors and other ministry leaders.

computers, described his Bible-Reader application as “an intellectual exercise that produced something that people seemed to want.”[7] As Christians, they saw the Bible was a source of spiritual nourishment, and as programmers, they saw the Bible as large dataset with nearly endless opportunities to manipulate, search, and display in new ways. This experimental excitement and pragmatic approach to the emerging technology characterize many of the individual development teams in this period. I have divided this era into two stages, Infancy (1980-1987) and Maturation (1987 onward), and chosen two presentative applications for each era that illustrate some of the key developments during that time.

Infancy: 1980–1987

The most well-documented list of Bible software from this era can be found in John Hughes’s book *Bits, Bytes and Biblical Studies*, published by Zondervan in 1987.[8] The book is an exhaustive collection of all kinds of software from writing applications to early bulletin boards, databases, printer settings, font choices, and other eclectic software. Giving a sense of the technology at the time, Hughes does not refer to these applications with the terms in use today such as “Bible app” or “digital Bibles,” preferring instead to highlight their primary function as “Bible concordance programs.” He then subdivided these programs into those that “work with an indexed MRT (machine-readable text)” or a “nonindexed” one (Hughes, 1987, p. 344), a categorization which few people without specialized computer knowledge would understand. This indicates that while these applications were a first step in bringing the electronic Bible out of the academy and into the church, they were not yet designed for the average churchgoer. What follows is a list of several dozen Bible software applications,

[7] The only public reference to Bible-Reader remains a Wikipedia entry (https://en.wikipedia.org/wiki/Biblical_software) made by Kellingley himself on April 1, 2014. The details of Bible-Reader story were communicated to the author in personal correspondence over Facebook Messenger and email January 30, 2017. The earliest Internet lists of Shareware accessible through archive.org do not include Bible-Reader (Crosswalk, 1999).

[8] Hughes went on to edit and write for *Bits and Bytes Review*, a newsletter that advertised on the cover of his book and which ran from 1986–1991.

including the date they were first launched (where available), and the name and location of the company behind it, compiled from *Bits, Bytes and Biblical Studies* (marked with †) and other sources (Maehre & Wade, 1987) and a blog post by the current author (Dyer, 2016) where Bible software developers added details not present in Hughes' work (marked with *). Those without a clear date are marked "<1987" to indicate that they were released sometime before the publication of Hughes's book.

Table 1. Bible Software (1982-1987)

Year	Name / Company	Location
1982	*The Word Processor* † Bible Research Systems	Austin, TX
1984	*Scripture Scanner* † Omega Software	Round Rock, TX
1985	*compuBIBLE* † National Software Systems Co.	Borger, TX
1985	*Bible Search* † Scripture Software	Orlando, FL
<1987	*BIBLE-ON-DISK* † Logos Information Systems	Sunnyvale, CA
1985[9]	*COMPUTER BIBLE* † Computer Bibles International, Inc.[10]	Greenville, SC
1985	*Bible-Reader* Philip Kellingley	United Kingdom
1986	*The Powerful Word* † Hatley Computer Services	Springfield, MO
1986	*EveryWord Scripture Study System* † Echo Solutions, Inc.	Provo, UT
1986	*GodSpeed* † Kingdom Age Software	Plano, TX
<1987	*ComWord 1* † Word of God Communication	Thousand Oaks, CA
<1987	*Wordworker: The Accelerated New Testament* † The Way International	Knoxville, OH
<1987	*KJV on DIALOG* † DIALOG Information Retrieval Service	Palo Alto, CA
<1987	*COMPUTER NEW TESTAMENT* † The Spiritual Source	Manorville, CA
<1987	*INTERNATIONAL BIBLE SOCIETY TEXT* † The International Bible Society	East Brunswick, NJ

[9] The date is not listed in *Bits, Bytes, and Biblical Studies,* but an article in the Kentucky *Courier-Journal* from late 1984 indicates it would be released the next year ("Memos," 1984).

[10] Frank D. Larkins, founder of Computer Bibles International was awarded a patent in 1983 for "Hand held portable computer in the form of a book." (1983). Retrieved from http://patents.justia.com/patent/D284966

<1987	*VERSE BY VERSE* † G.R.A.P.E., Gospel Research and Program Exchange	Keyport, WA
<1987	*MacBible*† Encycloware	Ayden, NC
<1987	*MacConcord / MacScripture* † Medina Software	Longwood, FL
<1987	*New Testament Concordance* † Midwest Software	Farmington, MI
<1987	*The Lamp* * Special Computers Services	Berrien Springs, MI
<1987	*EveryWord* * EveryWord, Inc.	Orem, UT
<1987	*Bible Soft* *	Homedale, ID
1987[11]	*Online Bible*	Canada

Reflecting on the locations of the companies developing these early applications, it is not surprising that several were located near the burgeoning computer hardware and software industry in California (Dochuk, 2010). It is also noteworthy that several of the earliest companies were located in the American "Bible Belt," and three of them in Texas during the same timeframe when Wuthnow argues that Texas was becoming a major force in the marriage between evangelicals and conservative politics (Wuthnow, 2014). Although documentation on many of these applications is now difficult to find, the advertisements and product reviews that still exist offer a glimpse into how they were marketed and received. Here we focus on two applications, "The Word Processor," the first commercial Bible software application which serves as an example of the entrepreneurial spirit of evangelical developers and "Scripture Scanner" which offers an example of how evangelicals began to frame Bible software as an essential tool in carrying out their mission.

The Word Processor (1982)

[11] An older version of The Online Bible website says it was started "in 1987, long before there was a world wide web." Online Bible Homepage. (2018). Retrieved from http://web.archive.org/web/20080312151153/http://www.onlinebible.org/

The first clearly documented case of a commercial Bible software application designed for nonacademic readers came from Kent Ochel and Bert Brown who left Intel in 1980[12] to form Bible Research Systems (BRS) near Austin, Texas. In January 1982, they released The Word Processor for the Apple IIe claiming the mantle of "the first Bible study software on the market" (Gustin, 2005). In this era, computer applications that interacted with a large database of information (such as the Biblical text) usually required a network connection to a central computer, but BRS began "mailing out computer memory disks containing the information" (Pollack, 1982). Their ingenuity attracted the attention of *Softalk Mag* where reviewer David Hunter compared Ochel and Brown's accomplishments to Gutenberg's printing press (D. Hunter, 1982). Hunter went on to describe how Ochel and Brown found a computer tape that was originally used to typeset a Bible and used compression techniques to reduce it down so that the entire text of the Bible could fit on four double-sided disks. A review in *Texas Monthly,* noted the significance of this: "The only drawback is that if you are reading Genesis, for example, and want to examine a verse in Revelation, you will have to switch disks."

Still, the review was very positive about the present and future of Bible applications, anticipating a hopeful day when "the industry develops hand-held computers with flat screens and letter-quality displays (all of which *will* allow you to curl up before the fire with your computer)" (Lubeck, 1984, p. 208). Ochel and Brown's work also begins to show how the evangelical background of a development team could influence the Bible software industry and the consumers who used their products. At this time, publishers of modern Bible translations were wary of licensing their texts to software creators, but evangelical programmers like Ochel and Brown decided it would be better to use an older, public domain

[12] Additional details of Bible Research System's version history were provided to the author via email from Bert Brown in October 2016.

text like the King James Bible than none at all. Reviewer John Edwards noted that this pragmatic choice meant that The Word Processor would be better suited to Protestant than "Catholics who … will find that The Word Processor lacks such material as the Book of Tobit and the Book of Judith." Even so, Edwards called the Word Processor "remarkable program" and a "monument [for] programmers" (J. Edwards, 1983, p. 97).

The Scripture Scanner (1984)

Another example of early Bible software developed in the Bible Belt was The Scripture Scanner built by Omega Software located in Round Rock, Texas (just outside Austin, Texas) first released in 1984. Hughes review praised it for its speed, albeit in rather technical language:

> Using Boolean OR logic, [The Scripture Scanner] concorded thirty-seven instances of *woman*, *husband*, *well*, and *friend* in the Gospel of John in a mere 2 minutes and 36 seconds, just 6 seconds slower than [The Word Processor]. And using the same range and logic, [The Scripture Scanner] concorded 367 references to ten words in 5 minutes and 20 seconds… Doing that by hand would take at least an hour (Hughes, 1987, pp. 352, 348).

Though slow by today's standards, reviewers began to notice and recommend applications like The Scripture Scanner not just to hobbyists but to pastors and church leaders.

The Scripture Scanner's feature set and advertising continued to signal the important role evangelicals were taking in shaping the industry. In addition to Bible reading and search functionality, The Scripture Scanner also included a word processor for taking notes and developing sermon or teaching outlines. A reviewer in *Preaching Magazine* wrote, "The built-in word processing capability allows almost limitless possibilities for faster, more efficient research and study" ("Computer software can aid preachers," 1987). This distinguished it from academic and linguistically oriented applications, making it more useful for the study needs of pastors and other teachers. The Scripture Scanner also made its evangelical purposes clear in its advertising. A full page ad in *PC Mag* ran with a headline

that combined religious and technical language: “The Greatest User Friendly Story Ever Told.” It went on to say: “Scripture Scanner is based on two important truths: first—The Bible is more than a book to be read; it is a *precious resource that should be used to its maximum advantage*, and second—the personal computer now gives us complete, instant access to the eternal, living, truths of God’s Word” ("The SCRIPTURE SCANNER Advertisement," 1984).[13] Here we see the evangelical belief that the Bible is not merely an ancient book to be studied but a central source of spiritual vitality, and we can also observe both a hope-filled openness and a pragmatic embrace of new technology.

The Scripture Scanner continued to be listed under *PC Magazine*’s Religion software section through 1986, but records indicate they abandoned the copyright on the name in 1985[14] for unknown reasons, and it is unclear when the software was eventually discontinued. Indeed, while entrepreneurial developers created dozens of Bible applications in the 1980s, very few of them survived the decade. This makes it all the more remarkable that Ochel and Brown continued to release updates to their flagship application called Verse Searcher through 2011 when its offices finally closed. Brown’s account of his software’s transition gives some sense of the scope of change in the computer industry during the application’s lifetime:

> Version 1 was written for the Apple II+. As other personal computers came on the market, the software was rewritten for the TRS80 (Radio Shack), the Kaypro, the Osborne, the Commodore 64, the IBM PC, the Macintosh and all Windows computers. It was first delivered on 5.25” floppies, then 8” floppies, then 3.5” floppies, then CD, and now is directly downloaded and installed from our website.[15]

[13] The italicized text was bolded in the original advertisement.

[14] THE SCRIPTURE SCANNER Trademark Information. (1985). Retrieved November 30, 2016 from http://www.trademarkia.com/the-scripture-scanner-73465827.html

[15] Personal correspondence with Bert Brown, September 28, 2016.

Maturation: 1988–2000

Toward the end of the 1980s, the Bible software industry began to mature alongside the burgeoning home computer market. Just as many of the early computer designs such as the Apple III (1980), Osborne Executive (1982), Coleco Adam (1983), IBM's PCJr (1984), Commodore Plus/4 (1984), Sinclair QL (1984), and IBM's PS/2 (1987) eventually failed, most of the companies behind the Bible applications in Table 1 above eventually closed their doors as well. But as the computer industry began to narrow into two main markets—Apple's platform and IBM compatible products with Microsoft software—a new wave of Bible applications began to emerge, and this second generation of applications would have a much longer shelf life. In addition to their expanded features, we will find that many in this new crop of commercially successful Bible applications were either started by or deeply intertwined with evangelical institutions.[16]

In a paper given at the Society of Biblical Literature in 1987, Thomas Boomershine, who had worked on several Bible software experiments, argued that more needed to be done to push the Bible software market forward. He said that in past technological revolutions, "the Bible was put into the new medium of the age in a loving and responsible manner that preserved continuity with the traditions of the past. What is needed, therefore, is an electronic Bible that accomplishes the same purposes for this new media age" (Boomershine, 1987, p. 8). One signal of the expanding feature set and usability of Bible software for which Boomershine advocated came in the 1993 publication of Jeffrey Hsu's *Computer Bible Study*. Instead of detailed technical specifications of applications found in Hughes's 1987 book *Bits, Bytes, and Biblical Studies*, Hsu wrote a chapter for each major function he felt Bible software could help pastors accomplish such as "The Electronic Sermon" (74-82), "Computer

[16] Harley (1993, p. 172) offers a personal account of how a Bible applications failed due to competing values between publishers and programmers.

Word Study" (134-147), and "Computer Topical Study" (174-185). He also addressed the fledging set of online resources (97-111) which provide "access to the latest theological research [and] the ability to debate and converse online with other believers and experts in religion" (Hsu, 1993, p. 98). Hsu's emphases highlight the shift from the academic work in the 1950-1970s toward software designed for use by pastors and ministry leaders, but it also reveals that Bible software was not yet created with the average Bible reader in mind.

However, by the late 1990s, popular Christian magazines such as *Christian Century* would regularly include updates about Bible software encouraging "pastors and other students of the Bible" that the software was now powerful enough to help pastors keep their language skills alive and easy enough to use to introduce new aspects of scripture to lay persons (Robert W. Klein, 1997). In 1998, Steve Deyo wrote an article for *Christianity Today*[17] in which he cataloged the Bible software available on the market at that time, organizing them into seven categories: Academic, Professional, Devotional, Family, Add-Ons, Bible Language Tutorials, and Children's Bible.[18] Under the Academic category, he listed only four applications, but he included sixteen under the Professional category and another ten under Devotional, demonstration a deeper shift into the consumer market. Other reviewers would continue to make a distinction between "reference-based programs" that included study resources versus "purely exegetical" ones aimed at those interested in original languages (Glynn, 2007).

The following is a list of applications compiled from Hsu's book (‡) and web-based lists, (Abigail, 1998) (•) and (Crosswalk, 1999) (▾), augmented with information from company

[17] The article included a header that said it was a "Special Advertising Section" meaning that at least some of the software applications paid to be included or written more about.

[18] Academic: BibleWorks, Accordance, Gramcord, and Bible Windows (later renamed iBiblio). Professional (applications designed for pastors and other ministry leaders): included PC Study Bible, Logos, Epiphany, WORDsearch. Devotional: included QuickVerse and a KJV application for Apple's portable Newton device.

websites when available. This list does not include all freeware, shareware, and Unix based software, but it does include software whose existence was mentioned in a list or review. When a start date was not available, the year is designated as "<1993" to indicate the article or book in which they were listed.

Table 2. Bible Software (1987-2000)

Year	Name and Company	Location
1987	*WORDsearch* † ‡ Navpress software	North Carolina Colorado Springs, CO
1988	*PC Study Bible* ‡ BibleSoft	Seattle, WA
1988	*QuickVerse* (Logos Bible Processor) ‡ Parsons Technology (Creative Computer Systems)	Hiawatah, IA
1988	*CDWord* ‡ Dallas Theological Seminary	Dallas, TX
1992	*Logos Bible Software* Faithlife (Logos)	Bellingham, WA
1992	*BibleWorks* ‡ (Bible Word Plus) BibleWorks, LLC (Hermeneutika)	Big Fork, MO Norfolk, VA
1992[19]	*God's Word for Windows* • Kevin Rintoul	Victoria, B.C., Canada
<1993	*Ask God* ‡ Integrated Systems and Information	Kirkland, WA
<1993	*Bible Link* ‡ Eagle Computing	Elizabethton, TN
<1993	*Bible Master* ‡ American Bible Sales	Anahiem, CA
<1993	*Bible Source* ‡ • Zondervan Electronic Publishing	Grand Rapids, MI
<1993	*Everyword Good News Bible*[20] ‡ American Bible Society	New York, NY
<1993	*Holy Bible*‡ Window Book	Cambridge, MA
<1993	*Holy Scriptures* ‡ Christian Technologies	Independence, MO
<1993	*Seedmaster* ‡ • White Harvest Software	Raleigh, NC
<1993	*The Word Advanced Study System* ‡ Wordsoft/Word Inc.	Irving, TX
<1993	*Thompson Chain Hyperbible* ‡ • Kirkbride Software	Indianapolis, IN

[19] The earlies record of God's Word for Windows was a version available for Windows 3.1 which was released in 1992. Island Code Works. (1999). Retrieved from http://web.archive.org/web/19991127121128/http://islandcodeworks.com/

[20] This shares the name "EveryWord" from a company titled "EveryWord, Inc." but it is unclear if these were related.

<1993	*Master Search Bible* ‡ Tri Star Publishing	Horsham, PA
1994	*Accordance* Oak Tree Software	Altamonte Springs, FL
1995	*Sword Searcher* (Bible Assistant)[21] • StudyLamp Software LLC	Broken Arrow, OK
1995	*Bible Explorer* • Epiphany Software	San Jose, CA
<1997[22]	*Rainbow Study Bible* ▼ Rainbow Studies International	
1997[23]	*Theophilos* ▼ Theophilos Bible Software LLC (Sold to Laridian)	
1998	*The Bible Library* ‡ Ellis Enterprises[24]	Oklahoma, OK
<1998	*iBiblio (Bible Windows)*[25] ‡ Silver Mountain Software	Cedar Hill, TX
<1998	*FindIt* • American Bible Society	New York, NY
<1998	*Bible on Disk for Catholics* • Liguori Faithware	
<1998	*Deluxe Bible for Windows* • Rocky Mountain Laboratories	Fort Collins, CO
<1998	*Douay-Rheims version of Holy Bible on PC* Preserving Christian Publications, Inc.	Philadelphia, PA
<1998	*Bible Companion* • White Harvest Software, Inc.	Raleigh, NC
<1998	*DataBiblen-GodSpeed* • SigveSaker	Stavanger Norge, Norway
<1998	*macBible* • Zondervan	Grand Rapids, MI
<1998	*AnyText* • Linguist's Software	Edmonds, WA
<1998	*BibleBrowser* • HolyMac	
1999	*Power Bible* Online Publishing, Inc. (powerbible.com)	Branson, MI
2003	*iLumina Bible* Tyndale Publishing House	
2011	*The Discovery Bible* Gary Hill, H.E.L.P.S. Ministries Inc.	

[21] The History of SwordSearcher. (2018). Retrieved April 30, 2018, from https://www.swordsearcher.com/history-of-swordsearcher-bible-software.html

[22] Rainbow Studies International. (1997). Retrieved from https://web.archive.org/web/19970327090752/http://www.rainbowstudies.com/

[23] About Us. (n.d.). Retrieved from http://theophilos.com/aboutus.htm

[24] A History of Ellis Enterprises. (2000). Retrieved from https://web.archive.org/web/20000919233657/http://www.biblelibrary.com/company.htm

[25] "Bible Windows" was created by John Baima and the company he founded in 1982, Silver Mountain Software. Microsoft later claimed the name "Bible Windows" infringed on its copyright for the name "Windows" forcing Baima to change the name to Bibloi.

As Table 2 shows, several of today's largest Bible software companies were founded between 1987 and 1994, including WORDsearch (1987), PC Study Bible (1988), CDWord (1998), QuickVerse (1988), BibleWorks (1992),[26] Logos Bible Software (1992), and Accordance Bible (1994) from Oak Tree Software which was founded in 1989. But as with the first era, there were many other applications which were not commercially successful enough to continue. In the following section, we will follow the development of two of these applications, WORDSearch and Logos. Applications designed primarily for detailed exegetical work, such as Accordance and BibleWorks, are important in the pantheon of Bible software, but this section will focus applications that have traditionally been marketed to a wider audience: WORDsearch (and the products it acquired) as an example of the intertwined paths of software and evangelical institutions, and Logos Bible Software (along with one product it acquired), because it is one of the most successful combinations of business savvy with biblical studies and because it will serve as the subject of more detailed interviews in the following chapter.

WORDsearch (1987), QuickVerse (1988), the Navigators, and LifeWay

WORDsearch, which began in 1987 and continues in operation today, along with QuickVerse and the evangelical ministries Navigators and LifeWay had a long, complex, and interwoven relationship that serves as a paradigmatic example of the ways entrepreneurialism and pragmatism have driven parts of the Bible software market. WORDsearch was first released in 1987 by evangelical computer scientists, James and Cheryl Sneeringer, both of whom earned their Ph.D. in Computer Science from the University of North Carolina under Frederick P. Brooks. Brooks had a long and successful career in computer science, having written the influential work, *The Mythical Man-Month: Essays on Software Engineering*

[26] In early 2018, BibleWorks announced it would close its doors later that year (Bushnell, 2018).

(1975) and winning the National Medal of Technology[27] in 1985. His faculty biography[28] also lists him as the faculty advisor for InterVarsity Christian Fellowship, an evangelical campus ministry, and it was through his work with InterVarsity that the Sneeringers became Christians. Eventually, their shared interests in computers and Bible study led them to create the first version of WORDsearch.[29] Two years after its release, the Sneeringsers partnered with NavPress Software, the publication wing of another evangelical campus ministry, the Navigators. But eventually, the Sneeringers and their partner Randolph Beck decided to part ways with the Navigators, and in 1993, they bought controlling rights to NavPress Software (Hawkins, 1993, p. C1).

This simple back and forth with the Navigators would become increasingly complex over the next decade as the company acquired several other Bible applications and then was itself eventually acquired, further intertwining itself with other ministries and secular companies. In 2002, the company changed its name from NavPress Software to iExalt Electronic Publishing, and then to WORDsearch (S. Horn, 2003b). In 2003, they merged (Beck, 2003) with Epiphany Software, Inc. (Kever, 2003), created by Silicon Valley programmers and engineers who were also evangelicals. Epiphany had a partnership with LifeWay Christian Resources, one of the largest evangelical publishers in the United States.[30]

Almost ten years later, in 2011, WORDsearch acquired another major Bible application company, QuickVerse. The story of QuickVerse, which had originally been released as Logos Bible Processor in 1998 by Creative Computer Systems founded by Craig Rairdin, further demonstrates the interlinked nature of the evangelical family tree and offers an

[27] Frederick P. Brooks Jr. (n.d.). Schloss Dagstuhl. Retrieved March 30, 2017, from http://dblp.dagstuhl.de/pers/hd/b/Brooks_Jr=:Frederick_P=

[28] Frederick P. Brooks, Jr. (n.d.). University of North Carolina. Retrieved March 30, 2017, from http://cs.unc.edu/people/frederick-p-brooks-jr/

[29] Hughes noted that it “meets a number of our criteria for an ideal Bible concordance program” but lamented that searches were limited to 30 characters (Hughes, 1987, p. 375).

[30] After the merger, the partnership with LifeWay continued, and WORDsearch would go on to produce “Bible Navigator” as LifeWay’s main Bible application (S. Horn, 2003a).

example of the ways in which business and Bible often interlocked. In Rairdin's (2013) retelling of QuickVerse's origin, he stayed up late at night to code it out of boredom from his day job as a programmer, and he later employed the help of other programmers with evangelical and fundamentalist backgrounds. He also noted that he partnered with a company called Parsons technology, creators of a popular accounting software package. He and the owners of Parsons planned to market their Bible software and accounting applications to churches, hoping that what is good for the church would also be good for business. This represents a subtle variant of religious entrepreneurialism that attempts to serve both sacred and secular markets. However, as we will see with other ventures that tried similar business models, these experiments rarely appeared to have brought much financial success. Eventually, QuickVerse was acquired by several companies including The Learning Company (1998), Mattel (1988), Findex (2000), and finally WORDsearch in 2011.

Through the 1990s, both WORDsearch and QuickVerse were popular at the lay and pastoral level. One reviewer wrote that "QuickVerse 2.0 for Windows is clearly the winner" (Moses & Johnson, 1993), and another called it "neat and uncluttered" and noted its speed (Hudson, 1992). Kenneth Daughters, who regularly reviewed Bible software in the early 1990s, praised it for it affordability, saying "The program is good, and the price is great," (Daughters, 1993, p. 91) and later that, "For an all-around general Bible study product, *QuickVerse* is my first choice" (Daughters, 1995b). But eventually, reviewers began to feel that it was lagging behind in cross-platform use[31] and overall competitiveness. Purcell wrote that "QuickVerse 2010 cannot really compete with the likes of Logos or WordSearch in available library content" (Purcell, 2009), and this lack of competitiveness likely caused its eventual sale. Similarly, WORDsearch was also well-received, with early reviewers noted

[31] Gomez (2005) felt that QuickVerse for Mac seemed to follow a more PC-like paradigm and was thus disappointing.

how its printing and word processing features made it well suited for sermon preparation (Ralph W. Klein, 1988), and later commenters noted its overall usability and fast searches (Baker, 1997). Two decades and several versions later, WORDsearch continued to be noted as "a very good fit for those involved in the pastoral and teaching ministry" (Gómez, 2010) in part because of its "enormous library" (Purcell, 2010, pp. 14,16).

But features and content were not always enough to make a Bible application successful. Just months after WORDsearch acquired QuickVerse, LifeWay announced the acquisition of both WORDsearch and QuickVerse, saying, "The addition of these two powerful Bible software resources is another vital step in LifeWay's overall digital strategy to serve churches and individuals."[32] LifeWay no longer uses the name QuickVerse, and it folded its Bible Explorer and Bible Navigator brands (originally from Epiphany Software purchased by WORDsearch) into a product now called WORDsearch Basic, a free version of the commercial WORDsearch.[33]

The long story of InterVarsity, WORDsearch, NavPress, QuickVerse, Epiphany, Zondervan, LifeWay, and others demonstrate the deep interconnectedness of Bible software and evangelicalism's entrepreneurial spirit. WORDsearch and Epiphany were both created by software developers driven to Bible software by their evangelical convictions, while QuickVerse was started by a Christian working at a nonreligious software company that wanted to expand its presence in the church marketplace. Through a series of acquisitions and mergers, both eventually ended up at Lifeway, a Christian publishing company. Though evangelicalism often appears to be composed of fiercely independent churches and ministries, this story shows that these entities are often interdependent and that Bible software has been one of the key parts of evangelicalism's circuitry over the last forty years.

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[32] LifeWay Acquires WORDsearch and QuickVerse. (2011). Retrieved from http://www.bhpublishinggroup.com/press-release/lifeway-acquires-wordsearch-and-quickverse

[33] Wordsearch Bible. (2017). Retrieved January 23, 2017, from https://www.wordsearchbible.com

Logos (1991), CD Word (1989), Dallas Theological Seminary, and Zondervan

The second major desktop Bible software application to which we will give our attention is Logos Bible Software. In an interview, Bob Pritchett recalled that in 1986 while he was still in high school, he wrote his first Bible software application and distributed it on bulletin boards.[34] Then, in the early part of 1991, while working at Microsoft, he and his colleague Kiernon Reiniger were "looking for a hobby project" to create software for the recently released Windows 3.0 operating system. "The idea was to build it … for Shareware, and by the time we finished the project and started shipping it, we realized people were willing to pay for it, but they also wanted us to license books that we have to pay royalties for, like the NIV Bible." Later that year, in December 1991, they released the first version of Logos Bible Software which included two translations of the Bible and three additional resources.

At this point, the origin of Logos is similar to other applications above: two evangelicals who enjoyed technology built a business for fun around their interest in the Bible. But a deeper look into the early years of Logos also shows that its development was intertwined with other evangelical institutions, notably Dallas Theological Seminary (DTS) and its CDWord Library project, which Logos eventually acquired. CDWord, though it was ultimately a commercial failure, is another excellent example of technical innovation paired with a special regard for the Bible. At the time of its creation, commercial Bible software applications could only display English characters, but not the Greek letters of the New Testament. The creators of CDWord wanted to change this and incorporate "the Greek New Testament, a full Greek lexicon, full-text Bible dictionaries and commentaries" (Deegan & Sutherland, 2009). All this additional information would not fit on the floppy disks of the time, so the team determined that they would use cutting-edge CD-ROM[35] hardware to

[34] Interviews with Logos conducted January 25, 2015.

[35] Hsu listed CDWord under a special category of applications using CD-ROMs which held considerably more data than applications released through diskettes (Hsu, 1993, p. 206).

distribute the resources. Two Dallas businessmen offered to find the project and the DTS Board championed it as a “major innovation in computerized Bible study” (Hannah, 2009, p. 204).

CDWord was released in 1989, and reviewers called it “the largest library of reference works for Bible study on one CD-ROM” (Daughters, 1993, p. 88) and “one of the most remarkable Bible-study tools ever developed” (Duduit, 1990, p. 88). *USA Today* also praised it for using “recently developed technology such as Hypertext software that links information by topic” ("Software lends new ease to Bible study," 1990). However, while it might have been “brilliantly conceived and state-of-the-art when it was released,” Harbin writes that “*CDWord* is a classic example of the pitfalls of the incunabular age” (Harbin, 1998, p. 28). In a story on DTS’s website, it was noted that “Despite users’ enthusiasm, low sales coupled with the escalating cost of development and copyrights undermined the financial viability of the CDWord project” (Finley, 2013).[36] For all its strengths, CD-ROMs proved too expensive and too difficult to configure with computers at the time, and DTS did not have funds to update the software from Windows 2.0 to Windows 3.0 when it was released in 1990. This led the board to consider selling the software and the rights to the materials it had digitized to a company capable of fulfilling their original vision. J. Hampton Keathley, III, a DTS student who would go on to co-found bible.org, introduced DTS and Logos, and he helped to negotiate the sales of CDWord to Logos Research Systems.[37] A review of Logos’s updated product that incorporated the data from CDWord and worked with Windows 3.1 was said to be “one of my new favorites” (Duduit, 1992).

As with the connections between InterVarsity, WORDsearch, QuickVerse, NavPress, and Lifeway, the relationship between Dallas Theological Seminary and Logos Bible Software

[36] I contributed to the story on DTS’s website which included created a video of how the software worked.

[37] Note: Keathley’s father and Bob Pritchett’s father were both DTS graduates. The detail about Keathley’s role in the sale of CDWord to Logos was related to me by W. Hall Harris in a personal conversation February 22, 2017.

demonstrates that the Bible software industry is often a blend of American evangelicalism with American technological entrepreneurialism, spanning across the publishing industry, higher education, and parachurch organizations. But unlike nonprofit churches and ministries that rely on the donations to say in operation, Bible software companies must maintain stable sales and profit margins in order to stay in business. Through the 1990s and early 2000s, Logos Research Systems underwent several transformations and rebrands as its leaders attempted to find a business model that would make them make them less reliant on tech-savvy pastors and help them reach a wider audience. These moves demonstrate a pragmatism which drove Logos to keep experimenting until it found something that worked.

One strategy they tried was to redesign their system so that it could handle texts other that Bibles and Bible study material in hopes of reaching new, non-religious markets. This began in 1995 when they released Logos 2.0 with the name "Logos Library System" a move that broke away from Hughes designation of most Bible applications as "Bible Concordance Systems" toward a general purpose application with many books and resources beyond Bibles. The next step came in 2001 when it rebuilt and rebranded its core system, this time as "Libronix Digital Library System"[38] which was designed to be general purpose enough that it could help publishers digitize a variety of different kinds of documents. This positioned the business to "focus on the needs of publishers" by producing "Multilingual Digital Libraries."[39] However, their website at the time listed as partners primarily American evangelical publishers (AMG Publishers, Baker Book House, Biblical Studies Press, Christianity Today, InterVarsity Press, and NavPress) and a variety of other religious publishers (Brill Academic Publishers, the German Bible Society, the Jewish Publication

[38] Tip from CS: Update from the Logos Library System to Libronix. (2009). Retrieved from https://blog.logos.com/2009/01/tip_from_cs_update_from_the_logos_library_system_to_libronix/

[39] About Libronix. (2006). Retrieved March 2, 2017, from http://web.archive.org/web/20060101130140/http://www.libronix.com/page.aspx?id=about

Society, and Oxford University Press),[40] indicating they may not have been able to attract publishers from other industries.

Another strategy that proved more successful for Logos was building cross-platform software and creating additional services that interconnected with its core Bible software. Through the 2000s, Logos remained a Windows-only product in a crowded Bible software market that included BibleWorks, WORDsearch, and PC Study Bible, but in 2008, it became one of the first major cross-platform Bible applications when it released the first version of its platform for Apple's OS X.[41] The following year, Logos released its version for Apple's iPhone, and in 2011, it expanded its mobile offerings to Google's Android operating system.[42] Logos continued to release major new versions every few years (version 4 in 2009, version 5 in 2012, version 6 in 2014, version 7 in 2016, version 8 in 2019) and extended its features and content to the Internet through websites like biblia.com and app.logos.com. The company also took on non-Bible software projects including Vyrso (a reading application for popular books), Proclaim (church presentation software), and Noet (a version of its core software platform designed to for those working in humanities fields). It also began publishing its own content, books, and resources under the name Lexham Press. In 2014, Logos Research Systems rebranded itself as Faithlife Corporation to position "itself for an ever-changing tech landscape" (2014b) and account for the wider range of products it offers.

All of these efforts paid off, and by the early 1990s, Logos had come to dominate the PC/Windows market. As one reviewer put it: "If you run the Microsoft Windows operating environment your obvious choice is Logos" (Daughters, 1993, p. 87). Daughters (1995a) also noted that "The *Logos* system can seem rather expensive to many, but it is hard to beat its

[40] Libronix Partners. (2003). Retrieved March 18, 2017, from http://web.archive.org/web/20030210221505/http://www.libronix.com/page.asp?id=techpartners0

[41] Logos Bible Software for Mac Now Shipping. (2018). Retrieved from https://web.archive.org/web/20090401060609/http://blog.logos.com/archives/2008/12/the_answer_to_your_question_is_now.html

[42] Logos for Android Alpha 4. (2011). Retrieved from https://community.logos.com/forums/t/33287.aspx

power or versatility." By version 2.0 (dubbed "Series X") and version 3.0, reviewers would continue to praise it for its ease of use (Parker, 2003), the number of resources available (Challies, 2006), and for its "innovative features, [including] automated reports, syntax searching, non-linear history, sparklines, cluster diagrams and directed acyclic graphs, to name just a few" (Gómez, 2007). While some reviewers felt other apps such as BibleWorks had a "more streamlined user interface" and superior original languages capabilities (Parunak, 2003) or that Accordance had superior Hebrew searches, they still recommended Logos for its overall capabilities and availability of books and resources. One lay reviewer rated twenty Bible software applications in terms of their usefulness for someone "who is interested in Bible software for personal study and teaching, yet does not have much extra time or money." He ranked WORDsearch as his #1 choice and placed Logos at a tie for fifth behind several free programs (Foster, 2008). The completely rewritten Logos 4 continued to receive praise for improving the speed of its searches and providing mobile versions of iPhone and iPad (Wicker, 2011). Version 5 was noted for its user friendliness, resources, and availability on multiple platforms (C. M. Barrett, 2013), but in addition to its higher cost, Logos also began to receive criticism for running "noticeably slower than Accordance 10 and Bible Works 9 on some computers" (Tabb, 2015). Newer versions continue to receive praise for being "the most powerful Bible software on the market" and for new features like the Sermon Editor, but reviewers note that its complexity introduces a steep learning curve and can cause it to be slow at times (Hilgemann, 2016).

In the following chapter, we will analyze the development team at Logos more closely, looking at its decisions making process and how its leaders understand the relationship between faith and business, but here it is important to mention that Faithlife as a company, and its CEO Bob Pritchett in particular, personify Hopeful Entrepreneurial Pragmatism. The brief retelling above of the company's rise and success indicates that part of what has made

Logos so dominant was its constant embrace of new technology, which allowed it to continually introduce new resources and new features, even if not all of them were initially as powerful as other platforms. This experimental approach—regularly rewriting the core software engine, expanding to new platforms, adding, dropping, and changing features—made it more agile and allowed it to reach more people than other platforms that focused on perfecting a narrower range of features and resources.[43] Part of this approach can be attributed to founder and CEO Bob Pritchett who, in addition to experiencing success in the Christian software market, has been recognized by nonreligious groups and publications. His ability to make pragmatic decisions that helped keep his Bible software company profitable earned him the "Ernst & Young Entrepreneur of the Year" in 2005 (Kennedy, 2015), the Puget Sound Business Journal's 40 Under 40 in 2007 ("40 Under 40 Alumni," 2015), and a consistent rank on the top 25 CEOs on Glassdoor (R. Nelson, 2015). He has also released books on business leadership including *Fire Someone Today: And Other Surprising Tactics for Making Your Business a Success* (Pritchett, 2006) and *Start Next Now: How to Get the Life You've Always Wanted* (Pritchett, 2015). Pritchett proved that these ideas were not merely theoretical when it was announced that Faithlife, named one of the best places to work in the U.S. (Gallagher, 2014), would lay off a sizable portion of its workforce (60 of its nearly 400 employees) in order to "restructure for sustainability" (Gallagher, 2016). Pritchett's life and work, from his experiments with Bible software as a teen, the various acquisitions, expansions, experiments, and even failures, embody both the entrepreneurial spirit of both evangelicalism and the technology industry along with evangelicalism's core appreciation of all things Bible.

[43] A reflexive note: In 2013, while working at Dallas Theological Seminary, I was part of a team who evaluated Bible software that DTS would implement for all its students. While DTS's New Testament faculty tended to prefer BibleWorks and the Old Testament faculty used Accordance, the faculty agreed that Logos would be a better overall package because it was available on more platforms (PC, Mac, iPhone, Android) and had a greater variety of resources available for students to purchase.

Summary of the Desktop Era

Several noteworthy trends have emerged in this analysis of the first wave of Bible software development, which included the early experiments in the 1980s and the mature companies of the 1990s. First, we have observed an ongoing shift in the audience of Bible software from academics in the 1970s to pastors in the 1980s to more general audiences in the 1990s. The earliest applications were largely “concordance tools,” but later they added features for pastors such as built-in word processors, and over time they became more user friendly, adding more resources and visual ways of interacting with the biblical text.

Second, while this study does not account for the origins of every software package listed, we have noted that the desktop Bible software industry has largely been made up of evangelical software developers with some connections to evangelical institutions. An important caveat to this, however, is that the most commercially successful and long-lasting applications tend to come from technologists who leave their technology professionals to develop Bible software, rather than existing Bible publishing companies that attempt to enter the Bible software market. That is, individuals who seem to truly enjoy both the Bible and technology have gone on to be more financially successful than existing companies and publishers that want to expand into the technology market. Zondervan, for example, launched several digital products in the 1990s such as the Expositor’s Bible Commentary (Baker, 1997), and in 2001, it launched Pradis Bible Software to compete with Logos, Accordance, and other market leaders. But by 2009, Zondervan discontinued Pradis and transitioned many of its users to Logos or other packages (2009). Similarly, in 2002, Tyndale, the publisher behind the “Left Behind” series, released iLumina which it claimed was the first “digitally animated Bible” with “narrated and musically scored animation,” (Kellner, 2002) interactive timelines, and an encyclopedia-like functionality. However, while the application sold a reported 250,000 copies, Tyndale eventually discontinued it (Garrett, 2014). In contrast,

WORDsearch was created by academic technology researchers, Logos was started by former Microsoft employees, and QuickVerse began at an accounting software firm.

As significant as the Bible software market was at the time, its effect on regular Christian readers was limited because, in 1989, only 15% of U.S. households owned a computer (2001). But the desktop market laid the groundwork for expanding into two emerging technologies, the Internet in the 1990s and mobile devices in the 2000s. In the next two sections, we will turn our attention to these two developments, focusing on how they contributed to making the digital Bible more accessible for ordinary Bible readers and how evangelical developers took advantage of this and began to influence the way average Christians encountered the Bible.

The Popular Internet Era (1995 onward)

As we have seen, by the 1990s, the desktop Bible software industry began to mature and reach a wider audience. But the arrival of the Internet in the mid-1990s would bring major changes to society as a whole and, as evangelicals began adapting to it, the creation and use of digital Bibles would change as well. As evangelicals extended their hopeful attitude toward technology to the Internet, they tended to interpret its ability to connect with people and ideas as compatible with their values of reaching people with the gospel. The same year the Internet was deregulated (1995), entrepreneurial evangelicals created a new wave of Bible websites that could display, search, and compare Bible versions without the cost of buying commercial software. And even though the Internet was home to all manner of content evangelicals would consider immoral or dangerous, their pragmatic lens told them it was better to bring the Bible to the Internet than to miss an opportunity to share their faith. At the same time, evangelicals would find that the Internet would come to influence their business and ministry models, particularly when it came to the ownership and rights of Bible translations.

Origins of the Internet and Bible Websites

The origins of the Internet reach back to the 1960s as researchers at the Massachusetts Institute of Technology (MIT), the United States Department of Defense Advanced Research Project Agency (DARPA), the University of California, and the National Physics Laboratory in the United Kingdom began to experiment with creating computer networks (Kim, 2005, p. 53). ARPNET, the first network connecting many of these institutions was created in 1969 (Wilson-Chiru, 1999), and several other networks connecting the U.S. and Europe were created in the 1970s, such as National Science Foundation's Computers Science Network (CSNET). During this time, developers created new protocols and technology standards that form the basis of the Internet we use today (Abbate, 2000, p. 83). These included Ray Tomlinson's email (1971) (Titcomb, 2016), the U.S. Department of Defense's TCP/IP (1982) (Hauben, 1998), and Tim Berners-Lee's World Wide Web (1989). The government-controlled networks underwent a series of splits and mergers through the 1980s, and in 1989, the first two commercial service providers, MSI Mail and CompuServe, were allowed to connect to the Internet (Schneider, Evans, & Pinard, 2009, p. 8). At this time, using the Internet was still highly technical, but web browsers like Netscape Navigator (1994) and Microsoft Internet Explorer (1995) soon made it more user friendly, and by 1995, the Internet was completely open to commercial traffic from a growing number of Internet Service Providers (ISPs).

The first .com domain name, symbolics.com, was registered on March 15, 1985, by a company originating out of the Massachusetts Institute of Technology. Tech companies (HP, GE, Apple, IBM), military vendors (Northrop, Lockheed, and Dupont), and universities (UCLA, Harvard, and MIT) followed suit, registering the first few hundred domain names (Forrester, 2007). As the Internet commercialized, other major brands registered their .com

names including Disney (1990), Pepsi (1993), Nike (1995), and Chase (1995),[44] and after the Internet was deregulated, Christians began to register the Bible-related domain names including bible.com (1995), scriptures.com (1996), biblestudytools.com (1997), biblestudy.com (1998), biblegateway.com (1998), digitalbible.com (1999), ebible.com (1999), and ibible.com (1999), as well as other names related to their faith such as christianity.com (1995), christian.com (1997).

In the following pages, we will trace the development of three of these websites. First, we will examine BibleGateway.com because it was one of the first websites to offer free online access to the text of the Bible, and because it has continued to be one of the most popular sites for accessing modern translations of the Bible such as the New International Version (NIV). The Bible Gateway development team will also serve as the representative from the Internet wave in the following chapter. Second, we will look at bible.com because of its historical significance as one of the first Bible-related domain names, its tumultuous business history, and its later connection to YouVersion. Finally, we will review the formation of bible.org because its founders also created a new Bible translation using a nontraditional, Internet-inspired methodology.

As we examine these three websites, several themes will emerge. As previously mentioned, the creation and use of Bible websites further illustrate evangelicalism's emphasis on the Bible and Hopeful Entrepreneurial Pragmatism orientation. But the Internet era also brings additional nuance to the way evangelicals negotiate their relationship with society in general and the technology in particular. As evangelicals embraced the Internet for its pragmatic value in reaching the world with their message, they would also find themselves resonating with and adopting some of its premises in the way they created and consumed

[44] Although records still exist for many of the first websites, some of this history has been lost to time such as the knowledge of the first .uk domain name (Murphy, 2010).

digital Bibles. For example, the Internet lowered barriers of cost and access and was praised for bringing information to the masses. Likewise, digital Bibles shifted from being primarily a tool of academics and pastors to the something the average lay person could easily access and use. Similarly, the idea that the Internet would make the world a better place by increasing access to information transferred over the evangelistic idea of making the world a better place through increased access to the Bible and the gospel. The Internet also brought with it the concept that information should be free, and this belief began to permeate the world of the digital Bible with users expecting that popular versions of the Bible should be available for free online. Some Bible developers would also take this to heart and create open source software and free to use texts and resources. At the same time, the philosophy of free and the desire to minister to the world through Bible websites would at times come in conflict with the need to create sustainable revenue streams that could pay for the hardware, development, and staff needed for such ventures to stay operational. Each of these themes will play out in different ways in the three websites considered below.

Bible Gateway (1993)

One of the first websites to display the text of the Bible and include search functionality was "Bible Gateway," launched December 28, 1993 by Nick Hengeveld, a student and staff member at Calvin College, with the following message board post:

```
Subject: [comp.infosystems.www] Anyone want to test a gateway?

Body:
I've got a gateway to the King James Bible put together with
perl.  You can find it at:

http://unicks.calvin.edu/cgi-bin/bible

It comes complete with a form for submitting feedback (if your
browser can do forms - if it can't, just send comments or
suggestions to ni...@calvin.edu).

Thanks,
Nick Hengeveld     |  RAGBRAI XXI   July 25-31  |
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LAN Administrator  |  Sioux City   -   Dubuque  |
Calvin College     |    Team Flying Monkeys
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The word “gateway” is a technical term for software or hardware that connects two computer networks. Used in this context, the “Bible Gateway” was created to connect Internet users to the Bible, specifically the public domain King James Version (1611). A later version of the website (1998) describes Hengeveld’s thought process and its connection to Calvin College:

> The Bible Gateway is a CGI script written in perl. It started as a script that would create HTML versions of Bible chapters. Halfway into its development, developer Nick Hengeveld realized that it could do the same thing on the fly and be much more versatile. Nick developed the Gateway on his own and its initial home was the Calvin College Web server, where Nick worked.[46]

In an article looking back at the formation and impact of Bible Gateway, Rachel Barach wrote that the site was originally intended “as an internal research tool for university students… [Hengeveld] wanted to employ technology to make it easy to quickly look up and read Bible text.”[47] This sense of experimental discovery echoes some of the ethos of the early desktop era. However, on the current version of the About Bible Gateway page, it expands Hengeveld’s original intent saying that he “had a visionary passion to make the Bible digitally accessible to everyone through the very new technology at the time called the Internet.”[48] This broader, more missional vision may have, in fact, been in his mind, but the original message board and the earlier, more technically oriented “About” page, along with the personal notes in Hengeveld’s signature (RAGBRAI is an acronym for Register’s Annual Great Bicycle Ride Across Iowa and Team Flying Monkeys is a cycling group) portray a young man more interested in exploring what he could create than in what the site might

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[45] Hengeveld, Nick. (1993, December 28). [comp.infosystems.www] Anyone want to test a gateway? Retrieved from https://groups.google.com/forum/#!msg/comp.archives/qDBF4nb7jSk/AxgqJK6BsusJ

[46] About the Bible Gateway. (1998a). Retrieved from http://web.archive.org/web/19980110132027/http://bible.gospelcom.net/bg/info.html.

[47] Barach, Rachel. (n.d.). Celebrating an Online Bible Legacy: Bible Gateway. Retrieved from https://www.biblegateway.com/article

[48] About Bible Gateway. (n.d.-a). Retrieved February 22, 2017, from https://www.biblegateway.com/about/

eventually become. Like Bob Pritchett's high school shareware Bible software, Hengeveld's initial launch of Bible Gateway appears to be the natural outworking of someone interested in both the Bible and technology, creating what he could with the resources he had.

In 1994, the year after its initial launch, Bible Gateway expanded its access beyond Calvin College to the broader Internet. This attracted the attention of the newly forming Gospel Communications International (GCI), a nonprofit that began as Gospel Films, Inc. in 1950. GCI was formed in 1995 in partnership with several other evangelical ministries including InterVarsity Christian Fellowship, InterVarsity Press, Ligonier Ministries, The Navigators, RBC Ministries, Youth for Christ, and International Bible Society, some of which had already ventured into desktop Bible software. According to interviews with the current Bible Gateway staff, one of Hengeveld's professors had a relationship with GCI which lead to GCI purchasing Bible Gateway from Hengeveld for a "very small amount of money."[49] The same "About" page that mentions Perl scripts goes on to say that:

> In 1995, Nick became the first webmaster at Gospel Communications Network. Here at GCN, the Gateway began running on the main Web server, which provided better performance and reliability.

Today, Hengeveld's LinkedIn page contains no reference to Bible Gateway, only mentioning that he left Gospel Films, Inc in late 1996 and currently works at Github.[50] Although Hengeveld had called it a "gateway" back in 1993, GCI did not purchase the domain name biblegateway.com until 1998, and it originally forwarded to bible.gospelcom.net. Later, they would adjust the branding from, "The Bible Gateway, a service of Gospelcom.Net" to "BibleGateway.com, a ministry of Gospel Communications." By December 1997, Bible Gateway had acquired licenses to include newer, copyrighted translations of the Bible including the New International Version (NIV) from Zondervan and

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[49] Interviews conducted December 3, 2014.

[50] Nick Hengeveld (n.d.). LinkedIn. Retrieved February 22, 2017, from https://www.linkedin.com/in/nickhengeveld

the New American Standard Bible (NASB) from Lockmann, and it was actively looking for more, including a note on its website that read: "We're open to adding still more versions. All we need are text files and permission from the copyright holder."[51] It had also formed a partnership with Logos Research Systems (then the name of the company that made Logos Bible Software) to provide a topical search feature,[52] and GCI's relationship with the International Bible Society allowed it to add non-English versions as well. The current developer team at Bible Gateway noted that Bible Gateway was GCI's most successful property and that the core codebase was written two times under GCI's ownership, first in C++ in 2000,[53] and second in PHP in 2005. However, reports indicated that GCI's funding began to suffer during the U.S. financial crisis and, in 2008, Gospel Communications decided to close its Internet division and sell BibleGateway.com to Zondervan for an undisclosed amount (Bauer, 2008; Hardiman, 2008).

The sale to Zondervan highlights one of the new problems that the opportunity of the Internet presented to evangelicals, namely that of funding. In an interview shortly after the sale, Zondervan CEO Moe Girkins said that BibleGateway.com was the "most widely-used Bible reference site in the world" and that the two main sites that directed traffic there were Google and MySpace (J. Weber, 2008). For all its success, Girkens also acknowledged the challenge of providing resources which were free for consumers to read, but not free for Zondervan to host and update. He believed that providing the Bible to the world was a core part of Zondervan's mission, but he also noted that the new Bible Gateway team would be exploring options for attempting to monetize its traffic, saying, "I believe there's room for something between zero and $1,000. I'm expecting a 99-cent pay-per-view type of offering."

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[51] Futures for the Bible Gateway. (1997). Retrieved December 10, 2017, from http://web.archive.org/web/19971210071327/http://bible.gospelcom.net/bg/futures.html

[52] Bible Gateway homepage. (1998b). Retrieved December 10, 2017, from http://web.archive.org/web/19980110131629/http://bible.gospelcom.net/

[53] About the Bible Gateway. (2000). Retrieved December 10, 2017, from http://web.archive.org/web/20001109055500/http://bible.gospelcom.net/bg/info.html

As of 2017, this has taken the form of "Bible Gateway Plus membership" offered for $3.99 per month. The membership removes ads from the BibleGateway.com website and adds access to several Zondervan books and study resources.[54] On its 25th anniversary blog post, Bible Gateway claims to be the "Most Popular Online Bible Search Engine and Bible Reading Website" with more than 14 billion views (J. Petersen, 2018a). As we will see in the interviews in the following chapter, the business model of ad revenue and membership is very different from the desktop Bible software model employed by Faithlife, and each model brings with it unique challenges. Desktop software requires continual sales of content and upgraded versions, while websites with advertisements need to incentivize repeated page views. In the following examples, we will see alternative strategies evangelicals employed to solve this problem with varying degrees of success.

Bible.com (1995) and YouVersion

One might expect that the most natural place for a popular Bible website would have been bible.com. However, as we will see, not every attempt by evangelicals to merge technology and the Bible worked, and the complexities of trying to provide free ministry resources online while also maintaining an income stream sometimes created unresolvable conflicts. In 1994, Roy "Bud" Spencer Miller and his wife Betty Miller, who had previously been pastors in Texas and Arizona, felt that they could reach a wider audience through the new technology of the Internet, and this led them to acquire the domain name bible.com. On the Millers's website, they write, "Through a miraculous event, Betty and Bud were able to obtain the Bible.com website in 1994." However, the records on who.is and other domain registrars show that the name was registered on "1995-03-23," and another report says that the Millers purchased the domain in 1996 for $50 (Hals, 2010). J. Hampton Keathley, IV (who helped broker the sale of CDWord to Logos and whom we will meet again in the story of bible.org

[54] Bible Gateway Plus. (n.d.-b). Retrieved February 22, 2017, from https://www.biblegateway.com/plus/

below), recalled that in 1994 or 1995, bible.com had been used to sell Grateful Dead T-shirts, but the owner let it expire, enabling the Millers to purchase the domain.[55]

Although the timing of their acquisition of bible.com is uncertain, the Millers made it clear that they saw a deep connection between their Christian faith and the technology of the Internet. They describe God speaking to them, telling them that they were to give up their traditional pastoring roles, but that "their ministry would continue; however, this time with a different pulpit, it would now be the sending out of their teachings and sermons through this new media ... [The] ministry's outreach would be to the whole world." In their autobiography, Betty Miller mentions growing up in a Baptist church, and that she later "received the Holy Spirit at a Full Gospel Businessman's meeting" which led her to begin a prayer, healing, and deliverance ministry. Her husband Bud also "received the baptism in the Holy Spirit" and they went on to found Christ Unlimited Ministries. Here, they describe the connection between their gifting, ministry, and website:

> She has authored 21 books plus numerous articles and teachings posted on the BibleResources.org website. She attributes her gift of writing to the Lord. Many times the prophetic gifts of the Holy Spirit will flow through Bud and Betty in the Word of Knowledge and Word of Wisdom bringing encouragement and solutions to the problems in the lives of those present.[56]

In this paragraph, the Millers use charismatic and Pentecostal language of the Holy Spirit's gifting alongside writing, resources, and technology, portraying them as naturally joined together by God in their ministry. They admit that when they bought the domain name, they had "no previous computer skills," but eventually bible.com became "one of the top Christian websites on the Internet."[57] There are early indications, however, that their lack of previous technical skill resulted in a struggle to capitalize on the potential of bible.com.

[55] Phone interview with J. Hampton Keathley, IV on February 22, 2017.

[56] About The Millers. (n.d.-a). Bible Resources. Retrieved February 21, 2017, from http://bibleresources.org/about-us/the-millers/

[57] Where We Have Been, Our History. (n.d.-b). Bible Resources. Retrieved February 21, 2017, from http://bibleresources.org/about-us/our-history/

Curiously, the earliest versions of the website recorded on archive.org from 1998 do not have copies of any English Bible translations.[58] Instead, the Millers wrote a series of "Bible Answers" and ran advertisements for books they had written that could be purchased in their online store. There was a "Bibles" page that linked to Bibles hosted on scriptures.com (registered July 1996), but the page did not include any modern English language translations, such as the Revised Standard Version or New International Version, only a link to the King James Version.[59] By 2000, bible.com stopped linking to scriptures.com, and instead offered links to English translations of the Bible hosted on other websites including the American Standard Version (ebible.org), the New English Translation (bible.org), and the New International Version (bible.gospelcom.net).[60]

This lack of a clear strategy led several investors to approach the Millers to buy the domain for as much as $100,000, but Bud and Betty refused, saying they had been "entrusted to run the site for a sacred purpose." After running the site for several years on their own, court documents show that the Millers sought help in making the site more profitable through a partnership with the Buffalo-based marketing firm Tek 21, Inc.[61] This partnership led them to split their ministry into two parts, the original 501(c)(3) non-profit Christ Unlimited Ministries and the new for profit Bible.com, Inc. founded in 1999 to "[own] the domain name and [handle] the marketing and advertising."[62] The board of directors of bible.com said that their goal was "to become very, very profitable" through "Christian Business Principles," but it appears they were largely unsuccessful at meeting these goals. Bible.com, Inc. made

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[58] Christ Unlimited Ministries. (1998). Retrieved from http://web.archive.org/web/19980110133428/http://bible.com/bibles.html

[59] SCRIPTURES.com. (1999). Retrieved from http://web.archive.org/web/19991013082020/http://scriptures.com/

[60] Read the Bible online! (2000). Retrieved from http://web.archive.org/web/20000229202117/http://www.bible.com/bible_read.html

[61] James R. Solakian vs. Bible.com, Inc. (2010). Retrieved from http://picker.typepad.com/files/bible.com.pdf

[62] About Bible.com Ministries. (2006). Retrieved from http://web.archive.org/web/20060219053229/http://www.bible.com/aboutministries.php

headlines in 2010, when James Solakian, one of the initial investors in the for-profit venture, sued the Millers in 2010 for failing to make the site profitable (Hals, 2010), and alleging that they created another entity, Christian Worldwide Marketing, Inc. (CWWM), to keep profits away from him, and that they transferred the ownership of bible.com back to the non-profit Christ Unlimited Ministries. Although the outcome of this case was not public, the Millers finally sold the rights to bible.com to Life.Church, the creators of YouVersion, and the Millers moved their content to BibleResources.org.[63]

The nearly 20-year history of Bible.com, the Millers and their investors, and eventually Life.Church and YouVersion again demonstrate that the overlap of the Bible and technology is a fertile ground for exploring the complex interactions between the evangelical desire for ministry and the demands of entrepreneurial endeavors. From their example, we can see that evangelicals in the technology industry who start a Bible project tend to see more success than non-technical teams that attempt similar projects. But in either case, we have also observed that in the Internet era, Christians struggled to balance their originating desire to "reach the world" through the "life-giving power of the Bible" with the need to generate revenue sufficient for developing and maintaining technology. And yet, they persist, trying new ventures with new partners until something works.

Bible.org (1995) and the NET Bible Translation

If BibleGateway.com serves as an example of a successful and influential website with humble origins, and bible.com was a largely unsuccessful venture that finally ended up in more capable hands, bible.org is something else—an Internet undertaking that attempted to radically rethink the way a Bible translation could be created and distributed. According to who.is, the domain name bible.org registered in 1995, just two months after bible.com, by the

[63] Bible.com joins the YouVersion family! (2012). Retrieved from http://blog.youversion.com/2012/08/bible-com/

Biblical Studies Foundation (BSF), a Christian nonprofit organization, formed in 1994 using seed money provided by Dallas businessman T. Joe Head, co-founder of Intrusion Inc.[64] A version of the bible.org homepage from October 1996 states that it was "Dedicated to putting quality biblical research and study materials on-line,"[65] and its mission statement was:

> The Biblical Studies Foundation is a non-profit organization founded for the purpose of distributing sound, evangelical Bible study materials in electronic format so those with small personal libraries or without access to a local Bible college or seminary library, etc., may have access to sound biblical studies from their home.[66]

Here, bible.org makes their evangelical identity clear, and they reinforced this by maintaining a webpage with links to other Christian organizations, the selection of which put it firmly within American evangelicalism. The seminaries and universities to which bible.org linked tended to be conservative, evangelical schools including Moody Bible Institute, Dallas Theological Seminary, and Westminster Theological Seminary, and many of the other websites to which it linked contained material consistent with evangelicalism, such as the Chicago Statement on Biblical Inerrancy, the Nicene Creed, and the Westminster Confession of Faith.[67] They also posted distinctly evangelical content, including introductions, outlines, and bibliographies for every book of the Bible, a sermon illustration database, and a "Pastoral Helps" section. Bible.org was later noted for having "some fine pieces on canon and textual criticism" (M. D. Roberts, 2007). Although not directory connected with Dallas Theological Seminary, much of the content of the site was written by DTS graduates and faculty, including both Keathley, IV and his father J. Hampton Keathley, III.[68] Today, bible.org continues its evangelically oriented focus, and the current About page describes its team as

[64] The dates and details of the formation of Biblical Studies Foundation and Biblical Studies Press were provided by a phone interview with J. Hampton Keathley on February 22, 2017.

[65] Biblical Studies Foundation. (1996). http://web.archive.org/web/19961030041731/http://www.bible.org/

[66] Mission Statement. (1997a). Retrieved from http://web.archive.org/web/19970209181856/http://www.bible.org/docs/about/mission.htm

[67] Other Christian Resources on the Internet. (1997b). http://web.archive.org/web/20040831081949/http://www.bible.org/other.htm

[68] J. Hampton Keathley Author Page. (n.d.-b). Retrieved February 20, 2017, from https://bible.org/users/j-hampton-keathley-iii

“comprised of gifted Evangelical Christians.” They also highlight that their materials have been designed to serve an evangelistic goal because bible.org exists “to freely share the good news from God to the entire world so you can KNOW the Truth about life and eternity.”[69]

But perhaps bible.org’s most significant contribution was not this content, but their original translation of the Bible. After forming BSF in 1994 and registering bible.org in early 1995, its founders realized that there were no websites where one could access a modern English translation of the Bible. At this point, Hengeveld’s Bible Gateway had only recently gone public and still only had access to the public domain King James Version. According to Keathley, Head attempted to negotiate with Zondervan to license the New International Version and with Lockmann for the New American Standard Bible for use on bible.org, but those negotiations failed. In late 1995, during the annual meeting of the Society of Biblical Literature, Head, Keathley, and several professors from Dallas Theological Seminary[70] decided that they could create their own new translation (Wallace, 2001), initially named the Internet Study Bible (ISB). Eventually, it was renamed the New English Translation (NET), a double entendre referencing the fact that, according to its preface, the NET was “first Bible in history to be published electronically before it was published in print.”

This change from the technology of print to the technology of the web appears to have brought with it some of the ideology inherent in the Internet. Andreas Köstenberger wrote, “Those responsible for the development of this new version contend that this is not just another English translation of the Bible” (Köstenberger, 2003, p. 96), and the founders of NET Bible argued there were four important factors which made it unique. First, the NET Bible was to be released online for free as it was being written, and it would invite feedback on the translation from its readers, which it would incorporate into later updates. The Preface

[69] About Us. (n.d.-a). Retrieved February 20, 2017, from https://bible.org/book/about-bibleorg.

[70] Again, for full disclosure, I mention that as of this writing, I am a graduate and current employee of Dallas Theological Seminary, although I did not have any involvement with the formation of the NET Bible. I was studying for my driver’s license examination at the time.

claims that this made the NET "the first Bible ever to be beta-tested on the Internet," and that the "significance of this is that the NET Bible team, from day one, has been listening to its readers." Köstenberger wrote that the "Second Beta Edition" of the NET Bible, released in 2003, "is essentially a work in progress. Reader input and new information are regularly incorporated." While desktop Bible software enabled non-scholars to search and examine Biblical texts in new ways, the process of creating the NET Bible included the layperson in the process of translation in a way that had not been done before. Indeed, the preface asserts that "scholars need to listen to the person in the pew as much as the layperson needs to listen to scholars," (*NET Bible: New English Translation*, 2001) which represents a significant shift in authority from previous translation processes. Scholars and reviewers also took part in the process of shaping the NET as it developed. In *Notes on Translation*, Fields praised the 1998 version of the NET for offering a helpful study tool, but also offered several critiques on certain passages (Fields, 1999). Daniel Wallace, New Testament editor for the NET, responded to critiques from Fields, as well as comments from readers and notes from field translators, saying that on their basis "The NET team has made thousands of changes to the text and notes of the New Testament since that last version" (Wallace, 2000).

Second, without the limitations of print, the creators of the NET Bible were able to create extensive study material published alongside the translation which took the form of over 60,000 footnotes. The concept of a Bible with explanatory study notes was not new (Fackler, 2004), but the NET also offered unique translator's notes explaining why a given manuscript reading was preferred or an English phrase was chosen. One reviewer noted that the notes were perhaps more valuable than the text itself: "Almost everyone who spends time with the NET Bible comes away praising its 60,932 notes, but reviews of the translation itself seem to be mixed" (Mansfield, 2009). Daniel Ritchie likewise praised the notes for their study value, but was also critical of some NET passages, saying it had a "tin ear for poetry" (Ritchie,

2003). Another reviewer suggested that the extensive notes meant that the NET "is a translation for a niche market, that group of readers with a serious interest in biblical study and some exposure to [original languages]" (P. H. Davids, 2003). In his *Visual History of the English Bible*, Brake (2008, p. 295) was not keen on the text itself, but offered high praise for the notes.

A third key distinction of the NET Bible was its philosophy of translation, which included both the concept of reader feedback and a break from conclusions to which other evangelical translations had come. Wallace, in an article in the journal *Bible Translator,* argued that the NET was "a translation done by evangelicals whose highest commitment is to represent the meaning of the text as accurately as possible" (Wallace, 2001, p. 335). This included siding with the RSV and NRSV on passages like Mark 2:26 and Isaiah 7:14 instead of making translation choices that would be more amenable to fundamentalist or evangelically-oriented readers such as the NASB and NIV. At least one critical reviewer felt the NET translators had gone too far with its gender-neutral pronouns and "un-Christian treatment of the Old Testament" (Marlowe, 2006). Though the translation philosophy of the NET does not appear to be as directly related to the Internet as the previous two, it does highlight struggles within evangelicalism as it wrestled with changes in society.

A final way in which the NET Bible sought to distinguish itself was by creating a new royalty model. Where previous translations required royalty payments for all printing and distribution of a Bible, bible.org allowed the NET translation to be "printed royalty-free for organizations like The Gideons International who print and distribute Bibles for charity." The notes, however, would require a royalty if they were printed or accessed outside of bible.org. The preface goes on to detail the editor's thinking on the value of copyrights, royalties, and the tradeoffs of various models, again demonstrating the new ways digital technology challenged the values of ministries and their need to generate revenue. While bible.com's

advertising-based business model ran into problems, bible.org may have avoided some of the same issues because it employed a "freemium" sales model to pay for some of its expenses. In the freemium model, "Users get basic features at no cost and can access richer functionality for a … fee" (Kumar, 2014). In the case of the NET, the digital text and notes were free to access, and the text was free to print for nonprofits, but printing or selling the notes required a royalty payment.

Even with this new royalty model, bible.org still faced the perennial problem upholding its ideals while simultaneously generating enough income to stay in operation. In 1996, as the first books of the Bible in the NET translation were posted at bible.org, Keathley recalled that some readers began asking for a print edition of the NET. This had not been part of the original idea of an online-only translation, but these requests led the nonprofit Biblical Studies Foundation to create the for-profit Biblical Studies Press (BSP) which would handle creating and selling the print editions of NET Bible. This was similar to the model bible.com would attempt a few years later, but bible.org appears to have been more successful, perhaps because they had a product to sell rather than an advertising model to fund. The sale of a printed Bible version designed online also reminds us that the offline and online worlds are often mutually interdependent. Bible.org also included links to Greek and Hebrew fonts which could be purchased from Galaxie Software, started in 1991 by Keathley,[71] a cofounder of bible.org. In addition to fonts, Galaxie produced electronic versions of Christian theological journals for use with desktop Bible software including Logos, Accordance, and Wordsearch. Keathley admitted that the relationship between the various entities was, at times "confusing," but it appeared not to have encountered the kind of difficulties experienced by the Millers and bible.com. According to Keathley, as of 2017, sales of printed

[71] About Galaxie Software. (n.d.). Retrieved February 21, 2017, from http://www.galaxie.com/about-galaxie-software

NET Bibles were enough to keep the organization at a basic operating level, but not enough to keep any full-time employees. Then, in 2019, HarperCollins announced (Peterson, 2019) that it would license the NET Bible under its Thomas Nelson brand and launch an updated version of the text, reinvigorating the translation and further intertwining it within the world of evangelical entrepreneurialism.

Bible.org's explicit evangelical identity, its interconnection with other evangelical ministries, and its rethinking of Bible translation and distribution fit the pattern we have observed in the ventures above. But the ambitious NET translation also expands this pattern and demonstrates that when evangelical embrace a new technology like the Internet, the process can influence the way their values are expressed and understood. The Internet as a technological and cultural phenomenon afforded new avenues for the creation, distribution, and use of digital Bibles that were not present in the desktop era. And yet, as evangelicals hopefully and pragmatically embraced Internet technology, they found it was not simply as a neutral conduit for their message. Rather, the Internet itself shaped the way they engaged with their sacred text. By inviting readers into the translation process, the NET Bible serves as an example of the social construction and social shaping of technology and of the content it produced. While BSF still owned the copyright and maintained the final say over the translation, this experiment represents a way in which the Internet allowed a shift in how authority was conceived of and carried out within evangelicalism.[72]

Summary of the Internet Era

We have observed that the Internet enabled a fresh wave of digital Bible development, which in turn enabled more people to read, search, and interact with the Bible on screen than in the desktop era. While the pre-consumer era focused on academics and the desktop era on

[72] Several other projects embraced this open methodology, creating fully open source applications like e-Sword and The SWORD Project or public domain translations like the World English Bible (WEB) and Open English Bible (OEB), which are often included other apps.

pastors, websites like Bible Gateway brought a digitized Bible to anyone with an Internet connection. In addition, the NET Bible attempted to revolutionize the way Bible translations were created and released by soliciting user feedback and incorporating it into the translation. This exposed an explicit social construction of technology process that emphasized design flexibility and made readers a part of the closure decision making process. We have also seen that, as with the desktop era, the majority of developers and content creators were evangelicals, and many of the most successful and long-lasting ventures have ties to existing evangelical institutions and ministries. Not every venture was successful, and this was due, in part, to the way the Internet brought with it the expectation that users no longer needed to pay for content. This required evangelicals to flex their entrepreneurial muscles as they experimented with new funding models that included advertising, subscription programs, a mix of for-profit and nonprofit.

The Mobile App Era (2000s onward)

The fourth and final wave of digital Bible development under consideration here is the Mobile Era, when electronic versions of the Bible began to be widely available on mobile devices, giving readers the power of a desktop application with the portability of a printed Bible. The start date for this era, however, is less obvious than the first electronic Bible project (1952), the first commercial desktop Bible software application (1982), or the deregulation of the Internet and first Bible websites (1995). One could begin in 1998 with the release of first mobile Bible applications for the Windows CE platform, such as Laridian's PocketBible. But because the platform was largely limited to business users, one could also point to the release of the YouVersion app for the Apple iPhone a decade later in 2008. Because of this range of potential start dates and to distinguish it from the Internet era beginning in 1995, I have chosen the 2000s to be an approximate reference point, with YouVersion's launch as the major shift toward regular mobile Bible app usage.

Below, we will briefly explore the development and maturation of mobile computing devices, the emergence of several important Bible applications on those devices, and the ways in which this final wave of Bible software has contributed to and shaped the ways Christian Bible readers engage with the scriptures. As with the previous eras, evangelicals continue to be a major driving force in the development of the mobile Bible apps, and we will observe an even greater shift in emphasis from biblical studies for pastors and academics toward the everyday Bible reader's spiritual growth and evangelistic outreach. Desktop Bible software had been designed for pastors and seminarians, and it emphasized features that made study and research faster. Bible websites opened some of these study features to regular Bible readers, but they could only be used when one was near a desktop computer. Just as the Internet brought a different set of priorities and abilities than desktop computers, mobile devices also brought with them new functionality and a new set of values that would frame what developers could create and how users interacted with what they created.

One of the most significant aspects of these mobile devices is their smaller size and portability. Because of this, scholars have argued that mobile devices occupy a different place of cultural significance than desktops. Goggin (2009) suggests that mobile phones adapt older technological affordances and draw them together into a single machine that functions as a business tool, a social communications platform, and an entertainment platform. Wright (2008) has also argued that phones have become one of modern culture's most prominent objects of conspicuous consumption. And, significantly for the practice of religion, a smartphone is small enough to be taken into a place of worship and used in place of a printed sacred text, the very object that Rakow (2016) has argued holds significant social-material value for Christians. In addition, studies show that most smartphones users carry it with them for the majority of the day (A. Smith, 2015; Stadd, 2013), meaning that the religious practices of reading, study, meditation, or listening are available more often than with a desktop Bible

application, a website, or even a printed Bible. Indeed, reviewers often open their articles with promises like: "Whether in class, church, conferences, or wherever, now you can conveniently access the biblical text, easily switching from one translation to another with the stroke of your stylus" (Dubis, 2001, p. 3). While some mobile Bible software includes study features that mimic desktop software, other popular apps like YouVersion deemphasize study features in favor of tools like reading plans, memorization, and social connection geared toward the needs of average readers. We will see that this shift represents a multi-faceted religious social shaping process as evangelicals adapted to and adopted some of the values of inherent in mobile technology while also working to shape it toward their own ends.

Below, we will trace the development of three sets of mobile Bible applications. First, we will briefly review the first mobile Bible applications for Apple Newton Message (1993), which are notable for their first-to-market experimental approaches, but not for their wider impact on Bible reading. Then, we will look at software for Palm Pilot (1996) and Microsoft PocketPC (2000) which are significant because they began to outsell desktop software, signifying a major shift toward average readers. Finally, we will turn to the rise and expansion of YouVersion's Bible app (2008) for Apple's iPhone and Google's Android platform, along with several other popular Bible apps. The table below collects several significant mobile applications some of which will be addressed in more detail in the following pages.

Table 3. Mobile Apps

Year	Application Name / Company	Platform
1996	*The Holy Bible - King James Version* K2 Consultants	Apple Newton
1997	*The Message for Newton* Servant Software	Apple Newton
1998	*PocketBible* Laridian	Pocket CE
1998	*BibleReader* Drew Haninger (Olive Tree Software)	Palm
1998	*Bible for Gameboy*	Gameboy

	Wisdom Tree Inc. (www.wisdomtreegames.com)	
1998	*BibleReader* Drew Haninger (Olive Tree Software)	Palm
1999	*BibleReader* Drew Haninger (Olive Tree Software)	Pocket PC
2003	*Palm Bible+* Poetry Poon (palmbibleplus.sourceforge.net)	Palm
2008	*YouVersion* (iPhone) YouVersion / Life.Church Edmond, OK	iOS
2011	*gloBIBLE* (globible.com) Fishermen Labs	iOS
2014	*She Reads Truth* Raechel Myers and Amanda Bible Williams	iOS, Android
2015	YouVersion for Kids Life.Church	iOS, Android
2017	*NeuBible* Kory Westerhold and Aaron Martin	iOS
2017	*Our Bible App* Crystal Cheatham	iOS, Android

Apple Newton (1993) and the First Mobile Bible Software

Computer vendors had been producing portable computers, precursors to today's laptops, since the early 1980s (L. Horn, 2011), but the first wave of true "handheld computers," often called Personal Digital Assistants (PDAs) appeared in the early 1990s. In 1993, Apple launched the Newton platform which included several generations of MessagePad devices, the first of which was 7.2 × 4.5 inches, roughly the size of a VHS tape (Mossberg, 1993), but with a low resolution black and white screen. The earliest reference available to Bible software developed for the Apple Newton came from a company called K2 Consultants, Inc. which announced in 1996 that "The Holy Bible - King James Version, is now a Newton Application."[73] It was sold alongside K2's other reference software which included material for medical doctors, psychiatrists, and statisticians.[74] This model recalls the joint venture of QuickVerse with Parsons's accounting software and Logos's attempts to enter the wider

[73] Shah, Sandeep. (1996). KJV Bible for Newton by K2. Retrieved from https://groups.google.com/forum/#!msg/alt.christnet.christianlife/eFyoi5rlefA/SIv1hiFokR0J

[74] K2 Consultants. (1996). Retrieved from http://web.archive.org/web/19961023025456/http://www.1stopsoft.com/K2.htm

reference market, but unfortunately, it appears that K2 was not any more successful. Another application called “The Message for Newton,” created by Servant Software, was offered for free from its website. Its slogan, “What’s the point of the MessagePad, without The Message?”[75] puts it in line with the other Christian creators who felt that every technology could be redeemed for its capacity to be used for gospel. However, by 1998, Apple had only sold 120,000 MessagePads (Brandel, 1999), and it decided to shut down the Newton platform (McCracken, 2012). So, while these early apps represent significant firsts, they had little if any impact on mobile Bible usage among average Christians.

Palm Pilot (1996), OliveTree (1998), and Laridian (1998)

In 1996, Palm Computing first released its first Palm Pilot, which was far more popular than the Apple Newton, having sold over 5 million PDAs by 1999 (Brandel, 1999). Although Palm, like the Apple Newton, eventually faded away when it was sold to Hewlett-Packard in 2010 (Swartz, 2010), it had a long enough lifespan to have several Bible applications developed for it. In the creation of these apps, we can see a distinctly evangelical focus on the digital Bible not merely as a study aid, but as a vital part of a technologically-inclined Christian’s spiritual development. Drew Haninger created some of the most influential of these apps, including BibleReader, first for the Palm platform (1998) and later for Microsoft’s Pocket PC (1999). In 2000, Haninger formed Olive Tree Bible Software[76] which went on to produce software for Mac, Windows, iOS, Android, and Kindle Fire.[77] In yet another instance of interconnected evangelical structures, Olive Tree was later acquired by HarperCollins Christian Publishing (Garrett, 2014) which also owns Bible Gateway,

[75] Home of The Message for Newton. (1999). Retrieved from https://web.archive.org/web/19991002142618/http://www.thefedors.com/themessage/
[76] About Olive Tree Bible Software. (n.d.-a). Retrieved March 5, 2017, from https://www.olivetree.com/press/
[77] Brief History of Olive Tree. (n.d.-b). Retrieved March 5, 2017, from https://www.olivetree.com/press/history.php

Zondervan, and Thomas Nelson. As for the motivations of Olive Tree's founding and growth, Haninger wrote that his own personal Christian faith was a motivation for starting Olive Tree, and he attributes its success to prayer, a focus on the Bible, and God's faithfulness.[78] After Haninger retired in 2012, Olive Tree's new CEO Stephen Johnson reiterated the company's desire to produce software that was not focused only on the study of the Bible, but also on the spiritual development of its users. In an interview in Church Tech Today, he said:

> We don't just create Bible software to let people study the Bible. We create tools that God uses to change lives … We don't just sync notes and highlights. We sync sermon notes from a pastors desktop to his iPad so he can preach a sermon that God uses to save a marriage. We sync the Roman's road verses to a phone so that a young lady can share the gospel with her coworker (Purcell, 2012).

Here we see a distinct shift from the aims of desktop Bible software, which tended to emphasize resources for pastors preparing sermons or academics doing research, toward an evangelical understanding of the purpose and goals of scripture itself, namely to "change lives" both for the reader and those around him or her. In this, the pragmatism of the HEP orientation is operationalized as evangelicals judge the value of Bible software not only in terms of popularity or financial profitability, but by the spiritual outcomes it produces in the lives of its users. In referring to the "Roman's road verses" used in evangelistic conversations, Johnson connects Bible software to larger evangelical values and characteristics such as Bebbington's conversionism and activism. And when Johnson addresses pastors, he frames his software not as the means to the end of study, but as a means of strengthening personal connection through pastoral work.

A similar set of motivations and goals can be found in the creation of two other mobile Bible software companies, Laridian in the late 1990s and YouVersion in the late 2000s. In 1998, Rairdin left the company he created, QuickVerse, to form Laridian where he could shift

[78] Haninger, Drew. (n.d.). Mobilize your Bible Study with Olive Tree. Retrieved March 5, 2017, from http://animatedfaith.com/olive_tree_bible_software.php

his focus from desktop applications to mobile devices. Instead of starting with the popular Palm platform, Laridian's first release in 1998 was for Microsoft's new Windows CE platform (later named PocketPC in 2000 and Windows Mobile in 2004). Later, Laridian released an application for the Palm platform called MyBible, which was a reworked version of an application called Scripture created by Servant Software,[79] the company that had released the freeware application The Message for Apple Newton. Though Microsoft and Palm would eventually discontinue their mobile platforms, Laridian's work represents a significant milestone because according to them: "In 2002, Laridian's MyBible program for Palm OS outsold all Bible software for any platform, including the most popular Bible software for Windows."[80] The means that, by 2002, mobile Bible software was outselling Logos, QuickVerse, Accordance, and all other desktop software discussed above combined. Although these numbers cannot be independently verified, if true, it would be a landmark in the ongoing shift from desktop to mobile and from leaders to readers.

This shift is evident in the words of reviewers who tended to judge mobile apps through a different rubric than desktop software, praising them less for features and power than for ease of use and access to popular translations. In a review of comparing Laridian's MyBible to OliveTree's BibleReader (both Palm-based applications), Dubis noted that BibleReader had more available English translations as well as several Greek editions, but that MyBible was the "clear winner" for its speed and because it alone offered the New International Version (NIV). Here, we see reviewers favoring apps not for their original language study apparatus, but for making the most popular translation of the Bible fast and easy to access. The reviewer also points out that these new mobile Bible applications included a Bible reading plan function that allowed readers to select from several different reading plans and then track

[79] Servant Software's Scripture ... is now MyBible! (2000). Retrieved from https://web.archive.org/web/20000831061808/http://www.thefedors.com/scripture/

[80] About Laridian. (n.d.). Retrieved March 12, 2017, from https://www.laridian.com/content/about.asp

their day to day reading progress, something that was less feasible on a desktop application (Dubis, 2001). The daily reading plan feature is significant because it highlights the way in which evangelical developers adapt to new technology and find ways to express their values through it.

As we saw in chapter three, evangelicals place a high value on reading the Bible daily, and their primary activity outside of Sunday worship is the Bible study where they gather to discuss scripture and reinforce their belief in its significance to their lives. The daily reading feature on a Bible app is a technological representation of this value, and it is made possible both by the constant presence of a mobile device and the developers whose own values them to create the functionality. This interdependence of software and hardware serves as another example of the mutual social shaping of technology, where the technological environment, the creators, and the users are all important actors upon one another. A *New York Times* review of Lardian's software highlighted another such feature that "allows readers to collect, memorize and review passages" (Gnatek, 2004). Like reading plans, Bible memorization is a spiritual discipline often encouraged by evangelicals in books and popular publications (Christensen, 1994; A. Davis, 2014; Lingo, 1996; Middleton & Middleton, 1996; Robertson, 1991). While desktop software can certainly be used for memorization, applications like Logos did not have a dedicated feature for memorization until version 5 released in 2012, well after the mobile era was underway. Here again, evangelical Bible software developers demonstrate the ability to shape technology in service of the spiritual practices they value. And though Laridian would eventually lose market share to iPhone and Android based products, it broke ground for what would come as mobile devices grew in popularity.

iPhone (2007) and YouVersion (2008)

By 2006, 67% of U.S. adults own a cellphone (*Mobile Fact Sheet*, 2017), but only 4% owned a Personal Digital Assistant that could run the Bible software discussed above.

Perhaps this relative rarity prompted one reviewer of MyBible to write, “I had to show it to my pastor so he wouldn’t think I was playing solitaire while he was preaching!” (Nicholaou, 2006). But beginning in 2007, when Apple launched the iPhone and Google launched its Android platform the following year, smartphone ownership would rise steadily rise to 33% of U.S. adults by 2011 and 77% by the end of 2016. One of the major Bible applications to ride this surge was YouVersion, produced by Oklahoma based megachurch Life.Church (named LifeChurch.tv at the time YouVersion was first produced).

Though YouVersion is primarily known for its Bible app today, it began in 2007 as the website YouVersion.com. The website allowed visitors to read the text of several English Bible versions, but its key innovation was allowing its users to annotate verses with their thoughts and comments. YouVersion.com was envisioned as a crowd-sourced, Wikipedia-like set of Bible notes contributed not by scholars through the traditional systems of publishing and commerce, but by average readers for free. It promoted the user-generated content saying, “Discover the relevancy of the Bible through the experiences, ideas and contributions of others” and promised that users could “contribute insights and ideas through audio and video files, images, artwork and written content.”[81] Like the creators of NET Bible who invited user feedback into the process of Bible translation, YouVersion.com’s creators were challenging the traditional authority structures of evangelicalism, suggesting that Bible study notes could be prepared by users, not authors, and vetted by commenters, not publishers.

At the time, teams of developers at Life.Church led by entrepreneur Bobby Gruenewald, were experimenting with many forms of Internet-based technology including streaming Sunday morning worship and prayer services (Hutchings, 2010), and YouVersion.com’s user

[81] YouVersion home page. (2017). Retrieved from http://web.archive.org/web/20070705040140/http://www.youversion.com/

generated content was one of these attempts to embrace the openness of the Internet. However, from my own reading of YouVersion.com in its first year, the comments from users did not appear particularly helpful or insightful, and commenters occasionally argued with one another in the notes. Today, the YouVersion.com website has migrated to bible.com (discussed above) and, perhaps as an acknowledgment that the initial concept did not work as planned, all the user-generated content has been removed from the website.

Even though YouVersion.com's user-generated content experiment was not ultimately successful, the Life.Church team continued to experiment with digital Bibles. In early 2008, Apple announced its App Store platform, and Gruenewald asked his team to create an iPhone version of the YouVersion experience for the launch in July 2008. They continued to use term YouVersion in their overall branding, but they named the app itself simply "Bible" so its purpose would be clear when users searched for "bible" or related terms in the App Store. *Christianity Today* reported that in the first twenty days, YouVersion had been downloaded 183,406 times. It reached one million downloads by March of 2009 and was in the top ten apps on Apple's App Store in December of 2010 ("YouVersion's Volunteer Army," 2011). They went on to release versions of the app for BlackBerry and Android devices and other platforms, and YouVersion regularly releases information when it passes major milestones in terms of downloads or number of chapters read at blog.youversion.com such as when users had spent 5 billion minutes reading on the Bible app (YouVersion, 2011), when they reached 200 million installs (YouVersion, 2015), or when they completed 130 million Bible Plan days (YouVersion, 2019).

The YouVersion team, their motivations, and methods of working will be the subject of a more detailed discussion in the following chapter, but here it is important to mention YouVersion's place in the movement of Bible software from academics to pastors to the common reader. In interviews, Gruenewald often speaks of the goal of YouVersion in terms

of “engagement.” “What we’re really trying to address is, how do we increase engagement in the Bible?” (L. Miller, 2011). The explains with the ongoing shift away from Bible software as a study platform with supplemental material and toward a focus on the text of the Bible itself that we have been observing. But Gruenewald goes beyond that to emphasize the regularity of engagement with the Bible. Rather than include features and content like commentaries that were traditionally understood as aiding understanding, the YouVersion team made a conscious decision that their app “was not for seminary grads” but for common readers. The first blog post announcing YouVersion’s Bible app mentions basic features like reading and searching, but it also emphasized its daily reading plan and the user contributions from YouVersion.com.[82] As mentioned, YouVersion would later remove the user generated notes, but not primarily because of their content, but because they found it did not produce the Bible engagement they wanted to see. In its place, YouVersion introduced social features designed to allow users to share Bible verses with one another and urge each other to read the Bible more often. Rather than simply making the Bible available on a mobile phone, Hutchings sees these kinds of features as a being “designed to encourage and teach users to read the Bible in particular ways.” He goes on to write that “these apps are attempting to train users into habits of regular Bible engagement through systems of easy access, planned routines, frequent prompts, pleasant rewards and opportunities to invest, personalise and share” (Hutchings, 2014, p. 160).

Hutchings analysis is in keeping with the primary argument here that Bible software development has been largely dominated by evangelical developers. As these evangelicals adapted to and adopted new technology, they embedded evangelical ways of understanding the meaning of scripture in their applications. Over time, as digital technology has become

[82] Storch, Terry. (2008). YouVersion Now Available on iPhone. Retrieved from http://web.archive.org/web/20080718040045/http://blog.youversion.com/?p=97.

more personal in the shift from desktop computers to individual mobile devices, Bible software itself began to focus on the needs and desires of the individual and his or her personal spiritual journey. This focus on the individual believer and his or her ongoing relationship to the Bible is especially suited to an evangelical understanding of the Christian faith, which emphasizes personal conversion and piety.

YouVersion also brought a significant change in the business model of digital Bibles, and with this new model came a substantial shift in power dynamics. The first mobile apps like BibleReader and Olive Tree followed a similar revenue model as desktop software where users either paid a set price for the app or the app was free, and users paid a la cart for the content they wanted. In this model, the developers would use a portion of what they earned from their customers to pay licensing fees for the Bible translations they used. Bible websites, on the other hand, made translations freely accessible and paid for the licensing fees and bandwidth through advertisements and other subscriptions. YouVersion, however, has neither of these streams of income. It has no ads on its website or in its apps, and it does not charge users a fee to use any of its thousands of Bible versions. Instead, it funds its operation entirely through millions of dollars in private donations (Shontell, 2013). Life.Church itself funded the initial stages of the app, and it is now supported by a variety of donors, one of the most prominent of whom is billionaire David Green, CEO of Hobby Lobby, who has spent much of his fortune on Bible-related products (Solomon, 2012), including the Museum of the Bible (Zoll, 2017). This funding model changes the social shaping process in a significant way, because it removes the economic feedback loop with the end user and shifts it to the donors. The success of commercial Bible software is determined by the way customers vote with their money, but YouVersion is primarily accountable to its donor base. As we will see in the following chapter, the YouVersion team makes decisions in part based on user analytics and feedback, but whether or not it continues to operate is

ultimately in the hands of its donors and what they value. In some ways, this brings the power structure of evangelicalism back full circle where control is in the hands of a small group of donors, publishers, and programmers just as it has been in previous eras. There are, however, a new wave of Bible applications popping up all the time, ensuring that users still have a wide range of choices in the digital Bible market.

A Fifth Wave of Apps

As of 2019, a search on an Apple iOS device for “bible” returns YouVersions’s Bible app at the top of the list, along with hundreds of additional results not included here, such as mobile versions of desktop applications like Logos and Accordance, apps for Bible websites like Bible Gateway and Blue Letter Bible, Bible apps from publishers of specific translations of the Bible, such as Crossway’s ESV Bible app, and apps with trivia or Bible-related images. In addition, there is a new wave of smaller, more focused Bible apps designed for a specific group of people, such as YouVersion’s Bible App for Kids, SheReadsTruth designed for female readers, and Our Bible for progressive Christians. There are also apps designed specifically to aid in certain practices like Verses which encourages memorization, as well as apps that prioritize listening to audio Bibles including Dwell which allows users to choose the voices and background music they prefer.

Ministries like the American Bible Society, the Digital Bible Society, Faith Comes by Hearing, and Crossway have also created Bible APIs (Application Programming Interface) that allow programmers to access Biblical texts in their apps without negotiating a complex licensing agreement. All of these innovations suggest that in addition to the four waves of digital Bible development identified here: the Pre-consumer Era, the Desktop Era, the Internet Era, and the Mobile Era, a fifth era may be emerging where popular versions of the Bible become a service upon which smaller apps with personalized and customizable experiences are built.

Summary and Significance

In this chapter, I have followed the main contours of Bible software history in order to show the unique place of evangelicals in that story. We have seen that, with the exception of pre-Consumer Era, evangelical programmers and entrepreneurs have been quick to adapt to each new technology out of Silicon Valley, and that the most commercially successful digital Bible products—from desktop applications designed for pastors and scholars to websites and mobile apps aimed at everyday Christian readers—have been created by evangelicals who began their careers in the tech industry, while also maintaining ties to existing evangelical institutions. These observations contribute to the larger research question of how programmers are influencing the way Christians engage their sacred text, because we have seen that these evangelical developers tend to prioritize evangelical ways of understanding and interacting with scripture.

This project also seeks to understand the characteristics of evangelicalism that drew evangelical technologists to create and eventually dominate the digital Bible industry. Following the approaches of social construction of technology and religious social shaping of technology, we have previously explored the history and underlying beliefs of evangelicalism as a group as well as their frame regarding technology. This led us to focus on two aspects of evangelicalism: the high priority it places on the Bible and a technological frame called Hopeful Entrepreneurial Pragmatism. The historical overview of Bible software in this chapter has shown these two principles in action, as evangelical developers sought to marry their interest in the Bible with their desire to use new technology in service of their faith. Where this chapter relied on public records to paint the history of Bible software with a broad brush, the following chapter will use focus group interviews with development teams from the Desktop, Internet, and Mobile eras to fill in the details of the beliefs and motivations of these developers and business leaders.

CHAPTER 5:

PROGRAMMERS AND THE BUSINESS OF BIBLE SOFTWARE

Much of modern life runs on a layer of software that is invisible to us. We see software clearly on our computer and phone screens, but increasingly, our televisions, cars, microwaves, and even kettles could not function without the millions of lines of code running in the background. If the software upon which we depend is invisible to us, even more invisible are the people who make it and their methods, motivations, and processes. In the previous two chapters, we have followed an investigative path from evangelicalism as a whole and its orientation to technological change (chapter three) toward the more narrow subject of Bible software (chapter four). In this chapter, we will add detail to that sketch by zeroing in on the individuals actually working in the Bible software industry, before turning to look more closely at the users of the software in the following two chapters. Here, we will follow three companies, each of which represents one of the waves of Bible software development, Logos Bible Software from the Desktop era, Bible Gateway from the Internet wave, and YouVersion from the Mobile era.

Drawing on focus group interviews with each of the three teams, we will explore aspects of the religious social shaping of technology (RSST) from inside the companies that make the software, examining their personal "core beliefs" and "negotiation process" (Campbell, 2010, pp. 60-61). We will also see how these values contribute to the social construction of technology (SCOT) processes, including "design flexibility" and "closure." I will organize their comments into four broad categories commonly used to understand companies: people, process, product, and profit.[1] We will begin with *people*, looking at the employees of the

[1] Morgan and Liker (2006) outline the sociotechnical system (STS) at Toyota using this outline. This approach is also followed by the American television program "The Profit" in which entrepreneur Marcus Lemonis attempts to improve companies by focusing on people, product, and process.

companies as individuals, noting their emergence into the Bible software industry from evangelical churches, institutions, and companies, as well as their open and optimistic views about the use of technology in their own religious practices. Next, we will move to the *products* themselves, focusing not on a list of features in the software, but on what the developers want to accomplish with those features and the overall goal they have for their applications. We will see that the language they use regarding their Bible applications is consistent with the writings and teachings of evangelicals who promote scripture engagement as a means of life change. Third, we will look at *process*, paying attention to the development models at each company as well as the internal and external inputs that contribute to the social shaping of Bible software. These include their twin identities as evangelicals and technologists and their immersion in Christian culture and the technology industry. In the final section, we will look at the *profit* models each of the three companies employ and how it shapes their priorities and influences the software that makes its way onto the screens of average readers, affecting how they understand and interact with scripture. In each of these sections, we will see that the developers have deeply internalized evangelicalism's emphasis on the Bible, specifically reading it regularly for its capacity to change lives, and that their posture toward technology and business is characterized by Hopeful Entrepreneurial Pragmatism (HEP).

Interview Approach and Structure

Scholars have studied software development teams using a variety of approaches, ranging from Tenenberg (2008) who applied an institutional analysis perspective to understand how company policies affect software teams to Dybå and Torgeir (2008) who used empirical data to study a paradigm called Agile Software development. The range of possible methodologies and techniques can be seen in Zuboff (2000), who organized SST approaches into three categories (the organizational sociology of software, the "social constructivist" analysis of

software, and studies in the commodification of software), Easterbrook (2007) who outlined five empirical approaches to studying software engineering, and Passos (2012) who explored some of the challenges in applying an ethnographic lens to software development.

As discussed in chapter two, from these possible methods, I chose structured group interviews as the most viable option for acquiring data on Bible software engineers. I designed a series of questions grouped into four areas: (1) how the individuals came to the company, (2) the goals of the team and their product, (3) what they hoped users would do with it, and (4) how they crafted their product toward those ends. This approach was submitted to the University of Durham, Department of Theology and Religion's Departmental Ethics Committee, and after receiving approval,[2] I began contacting representatives at Logos Bible Software, Bible Gateway, and YouVersion in order to set up interviews. I had hoped to create focus groups of 4-6 members (Patton, 2002, p. 236) including at least one executive or high-level leader and several programmers or designers who performed the day to day tasks of building and maintaining the software. My goal was to construct a narrative analysis (C. P. Smith, 2000) of their understanding of scripture and their role in the social shaping of Bible technology. One challenge to this approach is that the three companies vary significantly in size and proximity. Although the full rosters of each company are not publicly available, reports indicated that Logos Bible Software was the largest company with over two hundred employees, including developers, supports, and sales (Gallagher, 2016). In contrast, the YouVersion team was much smaller with between twenty and forty software developers, although conversations with people in and around Life.Church indicated that some of these team members might be involved in other digital projects at the church. Finally, the Bible Gateway team was around five members, all of whom I eventually interviewed.

[2] The consent forms can be found in Appendix 1.

My personal relationships figured heavily into the access I was given at each company. Due to previous encounters with Rachel Barach, General Manager of Bible Gateway and Stephen Smith, senior director of digital products for Bible Gateway, they were the first development team I was able to contact directly for an interview. The first interview took place in December 2014 with four of the team members, including a developer, a designer, and a database engineer. Because the members of the team were distributed around the country, I used the video-conferencing software Zoom to gather the team members together and record our conversation. Unfortunately, one member of the team was not available for this conversion, which necessitated setting up a second interview with that individual in January 2015. Although this meant that I was not able to observe the group dynamics with all five members of the team present, both interviews provided helpful insight into Bible Gateway specifically and the Bible industry more generally.

The second team I contacted was Faithlife, the parent company of Logos Bible Software. I have personally interacted with Bob Pritchett, founder and CEO of Faithlife, and other Faithlife employees as part of my professional life[3] which, again, made setting up an interview easier than it might have been for another researcher. This interview took place in February 2015 and included Bob Pritchett, along with three other Faithlife employees, an interaction designer, a director of software, and a development manager. This group interview was also conducted and recorded using the video-conferencing software Zoom.

Finally, I attempted to contact YouVersion to set up a similar group interview. However, when I contacted one of their senior leaders, I was directed to an administrative assistant who would set up a time for the leader and I to meet and discuss the interview process. After several months of back and forth emails, I was able to talk with this senior leader and show

[3] As disclosed previously, I have visited the Faithlife campus as part of discussions to implement their software at my employer Dallas Theological Seminary, and I have presented at their semi-annual BibleTech conference.

him the questions I had prepared. Unfortunately, he declined my request to conduct a focus group with members of his team, and he also declined to do a one-on-one interview. This was initially surprising because Life.Church portrays itself as very open, giving away software and other resources on its websites.[4] However, I later found out that many other researchers had approached YouVersion since its inception and rise in popularity, and they were not particularly keen on giving up time for another researcher nor had they always been pleased with the way they were described in some of the published studies. After nearly a year of attempting to set up an interview, a friend and former colleague living near the YouVersion team suggested that he might be able to set up a one-on-one interview with another leader within Life.Church who had direct oversight of the YouVersion team. For this interview, I met my friend and the YouVersion leader at a coffee shop in the Oklahoma City, Oklahoma area near one of the Life.Church campuses, and I recorded the conversation using a TASCAM audio recorder.

Each of these conversations was approximately one hour in length, and once they were all completed, the audio recordings were transcribed into electronic documents using the online TranscribeMe! service which maintains a staff of human transcribers. After receiving the text files from TranscribeMe! I listened to the audio again and edited the documents to ensure their accuracy. I then began coding the text for analysis along thematic and structural lines, noting subtle differences in the ways people in company spoke their employees, their software, and their decision-making processes (Merriam, 2015, p. 199; Ravitch & Carl, 2015, p. 248). The responses were then thematically grouped into the four sections of People, Process, Product, and Profit. Although I have mentioned some of the names of publicly known figures in the preceding text, in the following discussion, the names of all the

[4] For example, Life.Church's digital team maintains a website called "Open Digerati" (https://opendigerati.com/) where they release open source software and publish articles on software development and leadership.

individuals have been removed to allow for anonymity. I do refer to some individuals as "developers" or "leaders" to distinguish their roles when it contributes to understanding their statements, but I have attempted to avoid including any personally identifying information in their descriptions or direct quotations.

People: Who Are Evangelical Bible Software Developers?

As we saw in chapter three, American Evangelicalism is a broad category of religious people with a plurality of expressions, and yet within that variety, there are also a set of common characteristics including a special place for the Bible, an openness toward technology, a knack for entrepreneurialism, and a pragmatic sensibility. In the interviews with the Bible software teams, one of the first goals was to understand how these broad, aggregate characteristics were expressed by the individuals working in the Bible software industry. This first group of interview questions was designed to help build rapport and simultaneously to build a religious profile of the developers by considering the beliefs and events that led them to their current work. They also shared their feelings about the Bible, its place in their own faith practices, and how their work connected to their sense of calling and vocation. We then shifted to discuss their view of technology itself, their orientation toward it, and how this worked out practically in their own lives. In the software development world, some programmers build and maintain products that they do not personally want or need to use in their own life, while others operate in a culture of "dogfooding" (Shipman, 2004) where the company ethos encourages developers to regularly test and use what they create. This led me to wonder if those working in the Bible software industry were avid users of the products they create or if they personally preferred printed Bibles. I also sought to discover the ways in which their personal beliefs and religious upbringing might contribute to the kinds of features and functionality they create in the social shaping of technology process.

How Evangelicals in Technology Fall into Bible Software

Reflecting on my own experience, when I wrote my first bit of Bible-related software, I felt a sense of inevitability about it. I had grown up in a home where I could explore my fascination with technology through my mother's cameras and my father's computers, and I also grew up within evangelicalism, absorbing its appreciation for the Bible. [5] The more seasoned a programmer I became, the more the Bible, with its chapter and verse number system and multiple versions, looked like a database, and it was as if it were only a matter of time before I tried building something with it. As I reflected on this years later, I realized that during my first forays into Bible software, I had not first considered the relationship between technology and religion at a personal or academic level, nor had I developed a systematic view of scripture and media. Instead, I simply wanted to experience combining two of my interests to see what would happen.

In my interviews with the development teams, many of them reported following a similar path to the one I just described. That is, the combination of growing up within evangelicalism with its focus on the Bible coupled with a personal interest in technology eventually led them to Bible software. However, as we will see, there are variations on this theme, particularly depending on how long each person worked in secular software firms before transitioning to the Bible software world. Also parallel to my own experience, none of them mentioned any formal reflection on the academic literature in digital religion, media ecology, or philosophy of technology.[6] This lack of formal reflection means that the beliefs and assumptions about the Bible latent in evangelicalism will later emerge in the way these developers express their purpose at the company and the way the company understands its mission and function

[5] I wrote about some of my early experiences with technology in faith in *From the Garden to the City* (Dyer, 2011).

[6] Though formal reflection on academic literature did not come up in the interviews, it is worth noting that Faithlife holds a semi-regular BibleTech conference where they invite Bible software developers to share their work and reflections on the significance and direction of Bible software.

within the church. In addition, their interest in and beliefs about technology itself will undergird what they view as possible, helpful, and permissible for Bible software.

Though the exact circumstances of how each interviewee arrived at their respective companies differed, the common theme among all of them was a connection to an evangelical institution, such as a Christian college or business, along with a series of personal relationships that led them to a Bible software company. For example, of the five members at the Bible Gateway team, at least three attended private Christian universities, three had previously worked for Christian publishers or ministries, and several mentioned personal relationships that led to their employment there. Only one spoke of working for other companies first and coming to Bible Gateway through a recruiter. Similarly, several of the developers and designers at Logos Bible Software attended Christian universities or had a relational connection with Christian publishers or ministries. These connections that played a role in their eventual employment in the industry seem to be in line with Price's work showing that younger Christians often arrive at a sense of vocational calling through relationships, particularly those with mentors, and experiences within ministry contexts (Price, 2013).

It was from within this evangelical milieu of churches, universities, and ministries, that their interest in technology drew them toward Bible software. One developer spoke of choosing to work at a particular Christian organization in part because "I knew somebody who had gotten a job there and they were able to help me get a job," but he also spoke of being "drawn to" the company because of its "technological progressiveness." He initially took a technical job unrelated to Bible software at a Christian publisher and later transitioned to its Bible software team before finally moving to one of the companies examined here. His journey illustrates how the overlapping identities of evangelical developers operate in concert. As an evangelical, he wanted to work for a ministry, and as a technologist, he chose

the ministry based its orientation toward technology. Another developer traced a very direct connection between his dual interests in the Bible and technology when he discussed attending a Christian college where he majored in Biblical studies and computer science. Upon graduation, he "went online and Googled 'bible and software'" which lead him to a job listing at the Bible software company for which he now works. Others studied at nonreligious private and state universities,[7] but actively participated in churches or parachurch organizations that would help them maintain the strong commitment to the evangelical faith in which they had been raised. Several developers mentioned that they eventually found themselves applying their technical skill to Bible software as a personal project to "see if I could do it." In each of these cases, there was a strong connection between their evangelical upbringing, which emphasized the Bible, and their personal curiosity and openness toward new technology.

Another major factor in bringing these men and women to the Bible industry was their personal relationships. Several team members mentioned that a friend or associate told them about a job in the Bible software industry that piqued their interest and opened up a new possible vocational avenue they had not considered previously. One developer recalled a critical transition that led him into the industry, which occurred while he attended a private evangelical college in the Midwest. He intended to study accounting, but he took an elective in web development and found that he enjoyed it more than accounting. Then, through a series of unplanned, but fortuitous events, he was led into the Bible software industry:

> After I graduated, the [web development] professor offered me a job. Ever since then, I've just kind of got stuck to Christian organizations. So, I don't know how deliberate that was; that's just kind of how it played out.

One slight alteration to the pattern of younger employees transitioning from their evangelical upbringing directly into Bible software as adults came in the founders of Logos

[7] Guest (2013) and his co-authors explore the role of the university experience in shaping the faith of U.K. students often in ways that differ from the U.S. university system and social context explored by Smith (2009).

Bible Software and YouVersion. Whereas Bible Gateway was created by Nick Hengeveld while he was a student at Calvin College, Logos and YouVersion were created by Christians who spent part of their early career working in non-religious technology and business sectors. As mentioned in the previous chapter, before founding Logos Bible Software, Bob Pritchett had been an employee at Microsoft for several years. Similarly, Bobby Gruenwald and Terry Storch, cofounders of YouVersion, spent several years at technology startups and other ventures before joining Life.Church and later creating YouVersion. While these three men did not move directly from undergraduate work into a Bible software company, they too had been associated with evangelicalism and technology for some time before creating their respective applications. The common element, then, in all the interviewees was the background of evangelicalism with its high regard for the Bible combined with a personal interest and experience in technology. When combined, these forces eventually drew them to the Bible software industry and, as we will see below, the developers would eventually interpret their journey as a path on which God had guided them.

Calling and Vocation

Wuthnow has argued that religious talk is a "cultural work that people do to make sense of their lives and to orient their behavior" (Wuthnow, 2011, p. 9). As the interviews progressed, the discussion shifted from the initial data points of where each person went to school and the steps they took before arriving in their current position toward what Day (2011) calls "performative belief," in which people position their actions in hindsight according to an identity they want to construct. Later, when the questions shifted toward the company's priorities, the interviewees would occasionally interject commentary on their personal faith and role within the company. Interestingly, none of them talked about entering the Bible software industry due to an explicitly doctrinally-driven concern, and none of the

developers used the language of "calling"[8] as a pastor might or as is talked about in Christian living literature.[9] Instead, in the initial stories above, they often spoke in terms of falling into the profession through a series of events led by their interest in technology and their presence within evangelicalism. However, although the leaders and developers did not explicitly label their work in terms of a religious calling, several of them indicated that over time they had come to see their roles as spiritual work guided by God, and they connected their occupation to the larger mission of the church in the world.

When I asked a developer how she arrived at her present Bible software company, she laughed and said, "By accident and/or God's sovereignty—both." She went on to tell a story of how she had moved through various religious media companies, eventually leading at her present position. As she recalled each step, she recognized a complex combination of coincidences and personal choices she made along the way, but in retrospect interpreted her journey as one where God's hand was guiding her throughout. Indeed, several of the programmers mentioned that their work was spiritually significant for them and was not just ordinary software development. In talking about implementing a feature, one developer said:

> It's personal too, and that's what's nice about being here. It's not just something that I have to read off the wall and then try to implement, but it's something that's personally important to me.

Interestingly, this applied both to features that were directly Bible-oriented, such as displaying the text in a certain way or enabling a custom highlighting feature, but also to technical work that would have been largely the same when developing an application unrelated to the Bible. For example, a developer who works primarily on database maintenance viewed his job as an important work that honors God even if it is several layers away from something that might be considered directly ministry-oriented. In the last few

[8] Nel and Scholtz (2016) outline the historical use of "calling" particularly within the Presbyterian tradition while Pitt (2012) explores "calling" in the Black Pentecostalism.

[9] An example of popular level writing on calling, Smith (2011, pp. 9-10) speaks of three callings: (1) as a Christian, (2) "a defining purpose or mission, a reason for being" and (3) our immediately daily duties.

decades, evangelicals have written extensively on the subject of a "theology of work,"[10] in which they advocate that all work, whether sacred or secular, is honoring to God. This recasts Bebbington's category of "activism," in which evangelicals express the gospel through effort in the world, to include not only explicitly religious activity such as sharing the gospel or caring for the poor, but also to encompass other forms of "secular" work, including cooking, accounting, and, in this case, coding. Though the developers did not invoke "theology of work" language explicitly, their framing of their occupation was consistent with this line of thinking.

In addition to seeing their overall work as honoring God, several others connected their occupation more directly to the larger mission of God in the world to reach people with the message of the gospel in the scriptures. The following comment is representative of what several individuals from all three companies indicated regarding the role of technology in reaching the ends of the earth:

> One thing that I kind of had more of a personal connection with, because it's something I had spent a lot of time working on, was I think our global reach … it's rewarding to think about a group of people that wouldn't be able to find scripture in their language and on the Internet before, and they can now. … When you think about when Jesus talked about what things are going to start looking like and about the Gospel going to every corner of the Earth, I feel like what we do is, maybe playing a huge part of that in the 21st century.

What this and other interviewees seemed to be saying was that although they had not initially chosen Bible software as a vocational Christian ministry, they eventually came to see their role as a part of the greater mission of God in the world accomplished not only through traditional churches and ministries, but now through their work combining the Bible with modern technology. Some of the developers went on to express a sentiment that they viewed the entire Bible software industry as sharing a common "task" that requires multiple companies with different visions to achieve. Even as they recognized that they were

[10] Selected examples include Keller and Alsdorf (2014), Sherman (2011), and Witherington (2011).

competing for customers on one level, at a higher level, they saw themselves as coworkers in the larger mission of the church. In closing comments, a manager at Bible Gateway summarized how the business of Bible software functioned within the larger church:

> We need a lot of different approaches and a lot of different experiences. Like I said before, there's no one prescription for scripture. There's no one UI that makes the perfect sense for everybody in every use case. God is good because he knows we are diverse, and we have different gifts, and we need to bring them all individually to the task—to the task we're good at. Not everybody's tasked with tackling scripture engagement.

The language of "gifts" is probably meant to echo Paul's first letter to the Corinthians where he speaks of the "body of Christ" composed of different members or "parts," each with different "gifts" that contribute to the whole (1 Corinthians 12:12–14). Moreover, they also see modern technology, including screens and digital Bibles, as an essential part of the church's mission in the world today. A large part of that mission is "scripture engagement" which the manager above frames as the common goal of all Bible software companies. Under the category of "product" below, we will examine how the development teams use this term and how it interrelates with larger evangelical dialogues on Bible engagement. But first, we will examine their attitudes toward technology in their lives and in society.

Personal Views on Technology and Its Social Usage

In popular narratives about the tech industry, those who create technology are seen as its heaviest users. However, some technology entrepreneurs, such as Steve Jobs (Bilton, 2014) and Bill Gates (Retter, 2017), have made headlines for limiting technology use in their homes or not allowing their children to use the products that they create.[11] Along similar lines, some researchers have begun to detect a growing trend of people rejecting newer technology like digital books and music in favor of returning to analog music and printed books (Sax, 2016). So where do Bible developers fall along the spectrum of technology adoption—do they use

[11] Bowles (2018) argues that the new digital divide is between students forced to use tablets and those who can afford to attend schools that still have physical books, blocks, and other learning opportunities.

the products they create or do they prefer analog versions for their own personal Bible reading or in other religious situations? Such questions will gauge the degree to which Bible software creators fully embrace a "Hopeful" orientation toward technology, and it may influence the kinds of features they create and how they go about their decision-making processes. I asked questions about their personal technology preferences toward the end of the interview when it seemed I would have the most rapport with the developers, and they might be most willing to talk about their own Bible use.

When I asked directly about their own personal Bible reading, whether it was print only, digital only, or a mixture of both, the majority indicated that they used a combination of print and digital media, and that they determined the best media based on several factors, including what was most easily accessible, what they felt would be the best tool for the job, and what would be most appropriate in a particular community. While most talked about a continuum of media use and none spoke of completely rejecting digital media, there were several who said they almost never read anything in print, the Bible or otherwise. They had gone exclusively digital for all their reading no matter where they were or what kind of engagement they wanted to perform.

Of the three teams, members of Faithlife spoke in the strongest terms about their personal preferences for digital media and their belief that all people will eventually move away from print.[12] One Logos team leader joked, "I'm trying to think if I know where my paper Bible is." Although several developers talked about preferring digital Bibles because of the "convenience" of always having a phone in their pockets, this leader went on to argue that he felt the electronic Bible's ease of use also made it a superior way to access truth.

> I'm a big fan of the truth and I don't always know what the truth is, but it's easier to find out digitally, it seems, than it was in paper.

[12] I found this to be somewhat surprising because Faithlife's primary product, Logos, is designed for pastors and scholars rather than average Christian leader. But as these interviews were being conducted, Faithlife had also been expanding into consumer markets.

The advantages of digital media were so important that he also expressed a sense of concern for those who use print media, saying, “I actually feel pity when I see people with paper books.” In his view, people who use inferior printed Bibles are doing so mostly out of nostalgia and familiarity, and this might be harmful because it means they cannot get to “truth” as quickly or as easily as someone with a digital Bible. In the following chapter, we will see that some users have adopted a similar view, feeling that they needed the resources of Bible software to truly understand a passage. Future generations, he went on to argue, who grow up using screens in almost all aspects of their lives will be unlikely to retain this connection to paper Bibles. In another part of the interview, he outlined a general trend toward digital even if there were some holdouts:

> I think that people who read the Bible and use it will move more and more towards digital. There will still be the people who cling to the paper artifact because they like it.

Another developer from Faithlife also used the term “artifact” to refer to printed Bibles, and he categorized the use of printed Bibles as mostly including people who felt “comfortable” with the physical object because of some interpersonal connection, such as being handed down from a family member or having one’s own personal notes written in the margins. These categorizations align with Rakow’s observations about the importance of material uses of the Bible for communities of faith (Rakow, 2016). She argues that a printed Bible is more than just a tool for reading, and that its physical form enables it to take on three additional modes of usage: “commemorative, semantic-hermeneutical and performative practices.” Digital media, she argues, is limited in its ability to perform these same functions, and this will likely ensure an ongoing place for printed Bibles. However, some in the Logos team felt that eventually more and more Christians would abandon print and adopt digital platforms for reading.

> That's where it's heading, and sooner or later, we'll just expect everyone to have the Bible on their device. Things will get more digital, and things will get more online. I think it's what's going to be.

And yet, while the Logos leadership predicted a movement toward an all-digital future, some of the Logos programmers spoke about the importance of the social setting for the decision to use print instead of digital. One said that, at his church, "it's still maybe one in fifty who pulls out a phone during the sermon," and that he was the only person in his small group Bible study setting of eight to fifteen people who used a phone for Bible reading. At Bible Gateway, another developer described a similar divide between his personal digital-only reading of the Bible and what happens in a community setting. For him, using a digital Bible for reading was linked to his overall choices about using digital technology in other areas of his life:

> I pretty much exclusively use digital, but that's probably just because that's what I do with everything.

He went on to say that he finds digital media to be more "convenient" for activities such as the consumption of fiction books, playing video games, and communicating with others, and that this convenience was the underlying driver for moving toward engaging the Bible through "exclusively digital" means. However, he also indicated that for family devotions, he used a printed Bible. "If I sit down and do a little Bible study with my family, I research what scripture I want to go over and such online." In this case, he was not limited by an outside authority or a community expectation that said digital was inappropriate for this scenario. Rather, he had developed an internal heuristic for when print or digital was more appropriate. Members of other teams, as well as the end users we will meet in the following chapter, brought up similar boundaries at home, in Bible studies, and during church where their own personal preference for digital Bibles was trumped by the traditions and beliefs of the larger community.

Another developer who spoke in terms of reading the Bible exclusively using digital media at home, said that he did not do so in a worship setting because "I go to a pretty liturgical church, and I don't feel comfortable pulling out my phone." In her chapter discussing how religious communities undergo the process of negotiating the use of new technology, Campbell mentions that these discussions happen at both the individual and community level where conclusions about its appropriate use may differ. I observed similar differences emerge in the personal and corporate use of digital Bibles among developers and their faith communities. Campbell goes on to say that when a community decides to reject using a particular technology, "this does not always mean a full-scale rejection of the technology itself" (Campbell, 2010, pp. 112-113), but rather a rejection of its use under particular conditions or situations. In several of Campbell's case studies, an authority figure such as a Catholic bishop or Islamic imam may explicitly define the acceptable use of a form of technology, but she goes on to argue that evangelicalism's lack of a hierarchically based centralized leader means that such declarations are less common. Some evangelical pastors encourage the use of screen-based Bibles, but in other cases, individuals within a congregation are left to decide for themselves whether or not to use a screen to read the Bible. As we will see in the following chapter, their pragmatic openness toward new technology leads many to use their phones during worship, and yet, in the case of the developer speaking above, it still appears that the traditions and proprieties of the community play a role in whether or not worshippers in a given church feel comfortable using their phone during worship.

In addition to the developers who spoke in terms of exclusively digital use except in situations where it was deemed socially unacceptable, others spoke in terms of a continuum of use that depended more upon the goals he or she had in mind or what made sense within the situation:

> I like to mix it up. I do a little bit of both. … what happens with me is it depends on the day. If I've got just a few minutes between calls or something, I'll pull Bible Gateway up and do part of my reading plan and I'll do it digitally. If I have a little bit more time, if I have an hour of like solid planning and sit down and think time, I will sit down with my print Bible and do it that way.

This team leader went on to say that she intentionally uses different media in different situations in order to discover which were more helpful in a given scenario. She felt that this intentionality would enable her to perform her job better because she would understand the nuances of each media and be able to discuss their benefits and weakness with customers and friends. This discussion of different forms of media and ways of reading the Bible lead us to discuss the next important factor in the social shaping process of Bible software, the goals the development teams have for their product.

Product: What Is the Goal of Bible Software?

As I shifted from asking about the personal journeys of the individuals toward discussing the ways the team as a whole understood their product and its relationship to the Bible itself, I focused my questions on their goals for the software. Rather than asking explicitly, "What is your view or doctrine of Scripture?" I instead asked indirect questions such as, "Ideally, what do you want people to do with the software?" and, "How do you measure if your software is successful?" In almost all cases, the interviewees' answers included the term "engagement" in phrases like "Bible engagement," "scripture engagement," "engaging the Bible," and so on. In fact, this idea of "engagement" had, by the time of these interviews, become so prevalent that one team leader referred to their work as "[what] we in the industry buzzy-buzz world call 'scripture engagement.'" Although acknowledged in a self-deprecating way as the currently fashionable industry jargon, "engagement" nevertheless seemed to be the primary way most of the developers understood their role. Drawing on Malley's work on the importance of daily Bible reading among evangelicals, Hutchings has argued that Bible

software developers employ “persuasive computing” to encourage their users to read the Bible more regularly (Hutchings, 2017b, p. 207). Indeed, the developers frequently spoke in terms of working to increase Bible engagement using whatever means they could imagine and create. The teams seemed to enjoy the challenge of constantly trying new things to see what would work, thus expressing their HEP orientation fairly explicitly. At the same time, while all three teams shared a common goal of Bible engagement, this took different forms based on the target audience for the products. Because “Bible engagement” is central to both the spiritual significance and financial success of Bible software, it therefore warrants additional exploration.

Scripture Engagement in Evangelical Thought

The term “scripture engagement” frequently appears in literature from evangelical ministries and in books written by evangelical leaders and scholars. In nearly every case, the authors express the hope that any form of Bible engagement can lead to a spiritual encounter with God that will result in a life transformation.

For example, the Forum of Bible Agencies International (FOBAI) maintains the website scripture-engagement.org where they offer this succinct definition: “Scripture engagement is encountering God’s Word in life-changing ways.” FOBAI also offers quotations about the Bible from writers such as Eugene Peterson, Paul Trip, and R.C. Sproul, as well as articles guiding readers on how to perform various forms of Bible engagement including Bible reading, Bible study, Bible preaching, and memorizing the Bible. Fergus MacDonald, International Director at the Taylor University Center of Scripture Engagement, offers a similar, but more developed definition:

> Scripture engagement is interaction with the biblical text in a way that provides sufficient opportunity for the text to speak for itself by the power of the Holy Spirit, enabling readers and listeners to hear the voice of God and discover for themselves the unique claim Jesus Christ is making upon them.

Under MacDonald's direction, Taylor University entered a partnership with Bible Gateway to produce resources and materials on BibleGateway.com that offer additional definitions of Bible engagement and a biblical rationale for engagement (twenty-one verses including Psalm 1:1-3; Joshua 1:7-8; 2 Timothy 2:7; Deuteronomy 6:4-9; James 1:21-25; Luke 8:15; Colossians 3:16-17). It also guides site visitors on how they can try various forms of engagement, including praying scripture, memorizing scripture, *Lectio Divina*, storying scripture, and the Ignatian method. On both FOBAI's and Bible Gateway's websites, no one form of engagement is privileged over another. Rather, they are all considered valid methods that can lead to the promise of life transformation.

To underscore the importance of life change, Ovwigho and Cole from the Center of Bible Engagement, present data that links increased levels of Bible engagement to decreased immoral behavior. Specifically, they argue that their data show that "the more people read or listen to the Bible, the less likely they are to engage in self-defeating behaviors such as getting drunk, abusing drugs, pornography, gambling, and destructive thoughts" (Ovwigho & Cole, 2009, 2010). Other websites and articles often cite their work as proof that Bible engagement leads to positive life change. The Canadian Bible Forum summarizes these views when it writes, "The Bible informs and transforms the lives of Christians. Bible engagement matters because it sustains and nourishes faith" (Hiemstra, 2014, p. 8). In evangelicalism, ideas about Bible engagement are also connected to the urge toward evangelism and sharing one's faith. The American Bible Society states that "Our mission is to make the Bible available to every person in a language and format each can understand and afford, so all people may experience its life-changing message." Here, the promise of life change is accomplished through the availability of and engagement with the Bible. Wayne Dye, a professor at the Graduate School of Applied Linguistics, Wycliff's training center for future Bible translators, wrote a series of articles showing how various cultural factors might

impede or encourage scripture engagement in the context of missionary outreach (Dye, 2009a, 2009b). Like the previous examples, for Dye, the goal of Bible engagement is spiritual healing and transformation, but the prerequisite for this outcome is that the Bible must be readily available in an understandable language to the interested reader. This is where digital Bibles are thought to play an important role. Whereas increasing the availability of scripture was once solely handled by printed Bibles, now many of these agencies see digital Bibles as a significant means of allowing more people to engage scripture and experience the life change it brings.

Bible Engagement and Life Change in Digital Form

This discussion of missions, evangelism, and Bible engagement may not be at the forefront of every developer's mind as he or she does her work, but the ideas did bubble up in their discussions. Although there were some differences of nuance between the companies, one of the consistent elements was the desire to "increase" engagement in some way. One developer at Bible Gateway answered the question of what his team wanted their users to do with the software this way:

> A big part of [what we'd like people be able to do with our software] is just increasing the ability for users to engage with scripture, whatever that might look like. It's not just presenting it, but it's presenting tools that allow people to connect with it better.

Here, we can observe a latent pragmatism in that this developer considers any form of Bible engagement ("whatever that might look like") to be valid and beneficial. In addition, we find that the primary desired outcome of changing the software—making it "better"—is to "increase" the amount of engagement. Below, we will see that the impetus to increase engagement is also interconnected with a Bible software company's financial model and sustainability, but for now, we will focus on what specifically they mean by "increasing" scripture engagement. It appears that there were at least two distinct, but interrelated

meanings of "increase." One use of the term connected back to the more evangelistic, mission-oriented idea of Bible engagement where speaking of "increase" referred to making the Bible more broadly available to a larger number of people through the Internet and Internet-connected devices. A leader in the Bible Gateway team associated engagement, increase, and mission this way: "More and more people are [accessing scripture electronically], and I think that that has increased its availability, which part of our mission and commission." For this developer, increasing Bible engagement—that is, using technology to increase the number of people who have access to scripture—is both the mission of the company and tied to the mission of the church in the world.

The other more common meaning of "increasing engagement" was to encourage a single individual to spend more time with the Bible him or herself. This is clear in the way a leader of the YouVersion team stated their purpose: "Our mission statement is to help people engage in the Bible more." The key word here is "more" because the more people engage the Bible, the thinking goes, the more life change will occur. Certainly, the developers want their software to do things such as help users gain a deeper understanding of the meaning of the text or encourage them to explore cultural backgrounds behind it. But these appeared to be secondary concerns, a means to the end of the larger goal of life change. Again, this emphasis was most pronounced in the YouVersion team member who said:

> The reality for me … is that the Bible transforms people's lives. If we allow our hearts to be penetrated with what God's word says, we won't be left the same. My desire is that life change happens … the more time that I spend in it, the more that God's going to transform your heart.

That this sounds more like the words of a pastor or Christian ministry worker is in line with the way Life.Church articulates YouVersion as fitting within its larger goals of "finding new ways to help people connect the Bible with their daily lives." Their ultimate goal was not to create YouVersion, instead, YouVersion represents only the newest method in Life.Church's ongoing commitment to Bible-oriented Christian ministry. This embodies the

mantra that the "methods change, but the message stays the same" we observed in chapter three. It also echoes Malley's argument that, within evangelicalism, "Bible reading is distinguished from other reading by its daily pattern and by the expectation that God might speak to the reader through the text" (Malley, 2004, p. 105). The "About" page of bible.com makes this clear:

> YouVersion represents a new frontier in Life.Church's efforts. We aren't just building a tool to impact the world using innovative technology, more importantly, we are engaging people into relationships with God as they discover the relevance the Bible has for their lives.

He went on to say that if something else came along that did a better job of helping people engage with scripture than YouVersion, even if that caused YouVersion to shut down, he would be pleased to know that more people were engaging with God's word through the new technology or technique. This was perhaps the most all-encompassing vision of pragmatism offered by any of the interviewees, because it included not just new technologies they could adopt or new features they could create, but any tool or method at their disposal. While not quite as comprehensive, the common point made by all the Bible software teams was that all forms of Bible engagement have the potential to help people achieve a changed life, and that life change is more important than the form or type of engagement. The technology may change, but the message of life transformation is constant.

In some sense, this mirrors what Bielo observed in his work on evangelical Bible study groups. He noticed that during Bible study meetings, the participants often differed on the interpretation of a particular passage (e.g., the group was split on whether Proverbs 13:24 encouraged or rebuked corporal punishment), but at the end of the discussion, they always returned to a social discourse on the trustworthiness of scripture (Bielo, 2008b). Bielo argues that this pattern indicated that the goal of the study was not to come to a conclusion about meaning, but to reinforce the belief that the Bible has the answers to life's questions. Similarly, it seems that in the narratives around Bible engagement, evangelical ministries and

Bible software developers are less concerned with conclusions, interpretation, or forms of engagement than with reiterating the end goal of spiritual transformation that happens through Bible engagement. In this sense, Bible engagement itself is not the end goal, but a means to the end of life change.

However, the theme of individual life change through increasing Bible engagement that featured heavily in discussions with the Bible Gateway and YouVersion teams took on a slightly different nuance with the Faithlife team. While they have distinct emphases, YouVersion and Bible Gateway share several things in common that differ from Logos—they are both offered free of charge, they both target average Christian readers, and they both prioritize reading the Bible itself, placing all other content and functionality in a secondary, surrounding role. In contrast to this, Logos is a paid experience, designed for pastor-scholars, and encompasses much more than displaying the text of the Bible. One of their team members described it this way, "We think of our software as library software" of which the Bible is just one part. I recently noticed an online advertisement from Faithlife with the text: "The Web Is for Cat Videos, not Bible Questions," and a button that said: "Ask Logos Instead."[13] The message appeared to be that the Internet is good for entertainment, but deep study of the Bible requires a powerful desktop application like Logos. This is consistent with the contrast Hutchings drew between the way YouVersion and Logos portray their ideal readers, the former in terms of "engaging with short passages of Scripture as part of their everyday routine" and the later as a "creative scholar, hunting for new insights through attention to original languages, textual variations, historical reconstructions and libraries of commentary" (Hutchings, 2015c, p. 62). These differences mean that when Faithlife developers use the terms "engagement" or "engage," they are often referring to elements of

[13] This advertisement appeared on https://bestcommentaries.com, a website I operate, spring 2019 and was delivered through beaconads.com, a property owned by Faithlife.

the software and other texts rather than scripture itself. For example, when referring to measuring how customers use their software, one Logos team member said:

> We have actually quite a bit of insight into whether or not the software is being used, how much is being used, how much is being engaged with, actually which parts of it are being engaged with more or less.

Notice that they use the term "engagement" here in reference to "the software" rather than the Bible itself. Ultimately, the Logos team sees the engagement with the elements of the program (maps, lexicons, word studies, etc.) as being connected back to the text of scripture, where interaction with the software and its resources implies deeper engagement with the text. However, unlike YouVersion and Bible Gateway which see engagement primarily in terms of the individual Christian for their personal spiritual enrichment, the Logos team positions their software to be used by vocational ministry professionals for the purpose of benefiting the people they minister to through writing and teaching:

> We think of Logos as being professional or consumer software, so we hope that what it's doing is that it's making an impact on people who are teaching others. So that means pastors, professors, and seminary students. It really is a time machine, and what it does is it makes easy things easier, and makes hard things possible… That's why we emphasize libraries as well as just Bibles, so that we can get that professional user a very broad coverage of information very quickly to help them in their preparation.

In the discussions above with YouVersion and Bible Gateway, when the teams talked about how they wanted to make their software "better," they often spoke in terms of making it "easier" to use in hopes that doing so would "increase" engagement. In contrast, the Logos team framed their role in making things "better" and "easier" in terms of creating tools that resulted in their users spending less time performing specific tasks. This did not necessarily mean spending less time with the software as a whole, but improving the speed, efficiency, and power of research and study related functionality in their software. Faithlife's emphasis on "Bible study" as a primary form of engagement was evident when I asked directly, "What is the ideal form of engagement you want your customers to do?" Immediately, one of the

Logos team members responded with—"Study the Bible"—which made the entire team laugh out loud. The implication was that nothing could be more obvious: Logos was designed for study. He followed this statement by saying that when he creates and refines features, he thinks about his father-in-law, who is a pastor and how the software can reshape how he spends his time:

> I'm often thinking of him when I'm thinking about different features and thinking about how he's going to leverage it. I hope that it's just making his day-to-day job easier for preparing sermons so that when he goes and has to do other things like counseling, and whatever other things he does as a pastor, that he's not having to spend all of his time just preparing sermons. So I hope that it's saving him time to prepare sermons or study, doing a Bible study and getting that.

For YouVersion, narratives around their mission of increasing engagement meant finding ways to encourage their users to be "in the Bible more." But in this and the previous comment from Faithlife, we see a theme emerging that connects Bible software engagement to the idea of "saving time" or "spending less time" on tasks around Bible study and teaching preparation. They even refer to their product as a "time machine" which hints at a very pragmatic approach to technology and media.[14] Logos wants to increase Bible engagement by decreasing the amount of time a pastor spends in activities, such as pulling books from shelves and scanning them for information, that do not directly relate to preaching and teaching the Bible. Their software can do the work of scanning the library, organizing information, and prioritizing it much more quickly than a human, and theoretically, this could shave several hours off the pastor's sermon preparation time, allowing him or her to use that time for increased Bible engagement. But they also emphasized that saving time is not an end in itself, nor does it need to result in more Bible reading. Instead, the software creates a world where a pastor has more time to "do other things like counseling" and other non-teaching pastoral duties. The net result is that pastors spend less time performing the monotonous tasks

[14] Wajcman (2016) discusses the relationship between time, technology, and culture.

of gathering resources for study, leaving them more time to spend with people. This enables pastors to contribute more to their flock's spiritual nourishment or, to put it in the terms used above, life change.

YouVersion, Bible Gateway, and Faithlife share the common goal of life change through increased Bible engagement, but here we see that this principle operates differently based on the intended audience of the software. YouVersion operates under the assumption that increased Bible engagement will almost always lead toward life change, so they want to do whatever they can to provide the Bible on as large of a scale as possible and reach as many people as they can. As the YouVersion leader put it, "we just want to facilitate that relationship with the creator of the world and His word [and not get] in the way." In contrast, the Logos team seems less concerned with increasing the number of people reading or the number of minutes they read, and more with increasing the efficiency and efficacy of the engagement. They both display a version of pragmatism, finding what works, but while YouVersion's is expressed in maximizing accessibility and distribution, Faithlife's professional audience leads them to emphasize the labor-saving functions of their software and the role it might play in enhancing a leader's overall ministry.

Experimenting with New Forms of Engagement

As we have seen, the development teams have adopted the language of "Bible engagement" to describe what they see as their primary goal. They also indicated that they continue to experiment with new features designed to encourage their users to try new forms of engagement. If Logos emphasizes making the process of Bible study more efficient for pastors and YouVersion emphasizes increasing Bible engagement for everyday Christians, Bible Gateway seemed to position itself somewhere in between these two, offering a more defined set of forms of engagement. Drawing on their more than twenty years in operation,

the team approached forms of engagement from the perspective of what they observe their users doing:

> We know from our statistics that there are three ways that people mainly engage with Bible Gateway. There is the quick hit, where they are just looking for something really fast and they go in and out; usually that's a particular verse. There is the daily devotional, which … they do it themselves using their own plan. And then there is the Bible study, which is an in depth Bible study where you're looking at different passages and using all sorts of study features.

They went on to offer anecdotes about how their users go about doing each of these three primary forms of engagement (quick lookups, daily devotionals, and Bible study) and how the development team tried to make these activities easier and more functional. This involved thinking through how a long-time Christian might interact with their webpages as well as how those unfamiliar with the Bible or its chapter and verse number system might need additional prompts. One of the leaders of the Bible Gateway team also referenced their partnership with Taylor University to identify additional forms of engagement beyond what their users were currently doing, such as storying scripture and *Lectio Divina*.

They mentioned that the identification and documentation of additional forms was the first step. "The second step is finding ways to actually create functionality" that would guide users in the practices of these forms. This statement was one of the clearest indicators of how Bible software creators intentionally think through how they can use their platforms to potentially change the behaviors of their users and encourage them to read the Bible in new ways. At the time of the interview, Bible Gateway had recently purchased Olive Tree,[15] a mobile Bible study application, which allowed them to offer different apps to users, each of which would be optimized for a particular form of engagement, in this case, Bible Gateway for quick lookups and reading plans and Olive Tree for study applications. Similarly, in late 2014, Faithlife released a mobile application called Every Day Bible which forgoes the

[15] HarperCollins Christian Publishing acquires Olive Tree. (2014). Retrieved from https://www.harpercollinschristian.com/harpercollins-christian-publishing-acquires-olive-tree/.

robust study and research features of its main Logos app in favor of a simplified interface designed to encourage daily reading. Where the desktop and mobile versions of Logos had been designed for pastors and study, the marketing materials for Every Day Bible indicate that Faithlife is targeting the average Christian reader and promoting Bible engagement that leads to life change. The initial press release reads, "Read the Bible—just a little everyday—and you'll know it better. You'll get to know God better. And you'll learn more about what it means to follow him."[16]

By creating these additional apps, Faithlife and Bible Gateway are providing software designed to encourage certain kinds of behavior with the Bible. And yet, the developers continued to reiterate that no one form of engagement should be considered superior to another. They are all valid, but their effectiveness may vary from day to day and person to person. In one sense, they are attempting to influence how readers interact with the text, but at the same time, they are following the market, providing what their users are asking for. When I asked about what forms of engagement they wanted to encourage users to do, a team leader summed up their approach:

> The first thing I would say though, is that there is no one prescription for how people ought to engage with scripture … there are certain signs and markers that show that a person is invested and is making this a priority in their lives [but] The way in which one does that can vary from person to person, and in even for me personally, from day to day. There are so many different ways.

From this analysis, we can see that even though Logos, Bible Gateway, and YouVersion started in different eras, targeting different kinds of users with distinct products that prioritize particular forms of engagement, their developers and leaders speak in uniformly evangelical terms about Bible engagement, the need to encourage more of it, and the hope that it will result in spiritual transformation. "The more time that I spend in [the Bible]," one team leader said, "the more that God's going to transform your heart." This viewpoint on Bible

[16] Introducing the Every Day Bible App. (2014a). Retrieved from https://blog.faithlife.com/blog/2014/12/introducing-the-every-day-bible-app/.

engagement and spiritual transformation is consistent with the evangelical identities we observed in the previous section from the leadership down to the developers. They shared a common connection to evangelical churches, ministries, and institutions, and they appear to have absorbed its emphasis on the Bible, the distinction between methods and message, and the goal of transformation, leading them to a common mission of creating Bible software. In the following section, we will look more closely at the process by which they put these goals in motion and the sources from which they draw inspiration and innovation.

Process: How is Bible Software Made?

In the print Bible industry, publishers have been and continue to create new products which present the text of scripture in slightly different ways, augmenting it with images, notes, and cross references, and wrapping it in new bindings and fresh branding. Similarly, since the advent of consumer Bible software in the 1980s, digital Bible companies have been involved in a similar process of innovating, adding new features, new datasets, and new ways of displaying and analyzing Biblical texts. By way of comparison, the print Bible industry has been operating for more than five centuries, while the digital Bible industry has existed for less than ten percent of that time. However, digital technology appears to develop at a more rapid pace than mechanical print machines did, and the modern technology industry is much larger than the early print industry. This raises questions about the relationship between technology creators, technology users, the technology itself, and the cultures in which they all reside and operate.

Following the religious social shaping of technology (RSST) model, we have looked at the "history and tradition" and "core-beliefs and practices" of evangelicalism generally and the Bible software teams more specifically. We will now turn to examine what Campbell calls the "negotiation processes" and "communal framing and discourses." She offers a range of examples of the negotiation process, from ultra-Orthodox Jewish leaders who "reject and

resist” (Campbell, 2010, pp. 117-122) computer technology to evangelicals whom she sees as exemplifying an “accept and appropriate” technique of using computers to share the Bible with others (pp. 114-117), and Anglicans and Muslims who are more likely to modify technology to suit their beliefs (pp. 122-131). Similarly, there is a range of possible communal framing from official statements by religious groups like the Catholic Church or United Methodist Church (pp. 144-150) to more informal discourse online by movements like the Emerging Church (pp. 150-161). Below, we will examine how these questions play out within Bible software companies, and the role played by the developer’s religious identity in responding to internal needs, user feedback, and external forces. Torry has argued that faith-based organizations do not behave exactly like traditional business or churches, but instead have “characteristics all of their own” (Torry, 2016, p. 8) which we will see below. In addition, outside the religious sphere, Fulk argues that “technology users create rich meanings in mediated communication through their choices of media with specific symbolic features” (Fulk, 1993, p. 922). This takes on additional meaning for religious users of technology as we have seen in the developers’ lives and will continue to see in the users. This interplay of the internal dynamics of faith-based software companies and the meaning making of religious technology users offers a rich example of the social shaping of technology.

In the interviews with the programming teams, I wanted to discover how they understood their role in the process of creating and modifying the digital Bible experience for users. Do they see themselves simply as creating what the consumer demands, making Bible software a product of market forces? Or do they envision themselves as keepers of the correct way of interacting with scripture on a screen? To help answer these questions, I spent part of the interviews exploring the sources from which new ideas for Bible software features come. One might expect the companies to operate somewhat like a traditional software company

which creates and modifies its features through a combination of internal ideas and user feedback. Indeed, when I asked "Where do ideas come from?" or "How do you go about creating a new feature?" one of the senior founders at Faithlife said, "I'd say there's two ways that the ideas that I've put into this software get it originated. One is talking to the customers," and the other source was ideas from within the company. Another Faithlife team member offered additional detail: "We have several project management systems where we gather ideas. And we have several different communication channels where we get ideas and feedback from users." But beyond these two main sources, members of the development teams were also quick to point out that there was no single source of ideas for features. A YouVersion leader, for example, said that "[Ideas] happen from all over the place—I mean everywhere," and a team member at Faithlife offered a similar big picture evaluation of their process saying, "It's pretty organic. Ideas comes from everywhere."

In emphasizing "everywhere," this developer was acknowledging that software does not develop in a vacuum, but arises in part from the technological and religious environment around them. This is what the social construction of technology (SCOT) approach refers to as the *wider context* or the larger sociocultural and political milieu in which the development process takes place. von Hippel has shown that, in the context of manufacturing, it had been assumed that new ideas come only from the manufactures, but in reality innovation is distributed across users, manufacturers, and suppliers (von Hippel, 1998). In the context of digital Bible software, this wider context includes changes in technology (from desktop to Internet to mobile), as well as the larger discourse about technology and religion that takes place online and frames the expectations of what Bible software can and should do. For evangelicals, there are no definitive documents framing how one should approach technology such as those from Catholic, Anglican, and Methodist leaders mentioned by Campbell above. Instead, the religious guiderails that frame evangelical Bible software have more to do with

the kind of content they make available[17] and their judgment of the success—both spiritual and financial—of the products and features they create.

The developers' understanding of their process can be group under three major categories: (1) Internal Theological Instinct where ideas come individuals within a team or from the leadership making business oriented decisions, (2) User Feedback and Analytics where developers listen to users on message boards, emails, and focus groups, and analyze the way people use Bible software, and (3) The Technological Milieu where developers intentionally seek out—and sometimes unintentionally absorb—ideas from the technological world.

Internal Theological Instinct

Representatives from all three companies mentioned having systems in place for developing roadmaps that outline when they hoped to introduce new features. These often involved quarterly high-level meetings at which they set overall goals for long periods of time, as well as weekly or even daily progress updates between developers and team leaders to track progress at a smaller scale. In this sense, their structure and daily operations functioned much like a traditional software company.[18] Although some interviewees used terms like "prototyping," none of the teams brought up specific development methodologies such as Scrum, Agile, Waterfall, or Spiral Development.[19] Instead, they answered questions about where ideas come from by focusing on dichotomies such as the difference between ideas that came from user feedback versus those that came from the intuition of the

[17] For example, the progressive Our Bible app mentioned in chapters one and four has devotionals entitled "Asexuali-TEA" and "(S)Exodus: Affirming Your Identity, Body, and Fight for Justice Through Exodus" that do not appear in the YouVersion devotional list. Retrieved March 7, 2019.

[18] Paternoster (2014) synthesized forty-three studies of the structure of software development companies. Nagappan (2008) has shown that the structure of a company is an effective predictors of its proneness to failure.

[19] These methodologies are sometimes called Software Development Life Cycle (SDLC) models, and they represent different approaches to planning, building, testing, and deploying software. For example, in a waterfall approach, each step of the entire project is carefully planned and sequential, whereas Agile or Spiral methods have shorter iterations of development and feedback is immediately incorporated back into the project.

developers, or ones where the development team preferred a certain look or functionality, but the data and analytics showed them that users preferred something they disliked.

In this section, I will focus on scenarios where the idea for a feature or change came from within a team, differentiating when that may have come from a higher-level business decisions and when it originated from an individual developer. Both the YouVersion and Logos teams had members who had been with the companies from their origin, and both mentioned that the process of evaluating and implementing ideas had changed over time. Initially, the ideas came almost entirely from the small group of original members, but later grew to encompass the entire team as well as additional, outside sources of input. The YouVersion representative explained the change over time this way:

> There was a day when those ideas, for the most part, were Bobby [Gruenwald's] and my ideas. The team was a lot smaller back then and looked a lot different back then, but now, honestly speaking, the team is laced with amazing guys, and so what I love so much right now is that a new feature launches and it's sometimes challenging to go back and figure out where the idea actually [came from].

This presents a challenge in tracing the origin of a new feature because even at the smallest level of a software development team, there are social processes which blur the source of innovation and design. Unless a product is developed by a single individual (like Campbell's example of Tim Buckley), its features will likely be created by a complex process of multiple inputs and iterations over time. However, even with this in mind, the teams shared instances when the ideas for the software had clearly originated from a lower-level developer or designer. Some of these ideas involved new methods to encourage Bible engagement, and others were related to less visible aspects of the technology. A Bible Gateway team leader, for example, gave two different examples of developers asking for permission to work on an element of the project, one based on efficiency and one based on what that person thought would be interesting:

> Some of [the ideas] come from developers, where they say, "I really need to rewrite this," or, "It would be really great if we could do this."

In the first case of "rewriting" something, the developer is likely suggesting that something could be made more efficient or that it could be designed to be more flexible and reusable within the system. In these cases, the developer is often in the best position to evaluate the efficiency of a piece of code, since he or she is most intimately familiar with it. This type of suggestion falls under an area of technology development that is not well studied because end users generally never see it directly. While social shaping narratives tend to focus on the end user's experience of a product, the day-to-day reality of software development involves many small steps largely hidden from view or the possibility of observation. A member of the Bible Gateway team whose responsibilities include database management addressed his role as one of these invisible agents, by remarking that he is most successful in his role when the end user is less aware of his work:

> Because of the way my job works … I don't necessarily worry about what the end user necessarily sees, because my job is basically, if I'm doing it right, the end user will have no idea I was ever there. I'm the man behind the curtain [laughter], and then if I'm doing it wrong, then everybody notices because things go down.

This statement highlights an important way in which the relationship between software developer and reader is different from that between print publisher and reader. A print publisher's relationship with a reader largely ends with the finished production of the physical book. Once the reader purchases the book, his or her only interaction is with the book itself and its content. However, in the case of a digital Bible where the software and content are constantly being updated, the user has an ongoing relationship with the company and the developers behind it, even if a developer's role is largely hidden until he or she accidentally breaks something. This might happen if the developer were to make an update to the software or the content in a database in such a way that it temporarily disrupts the user's access to the Bible. According to this developer, his orientation toward end users has only

two states—functional or broken—and users only become aware of his existence in the broken state, when he has rendered their access to the digital Bible non-functional. This desire to keep things running smoothly, and thus stay out of sight, might motivate a developer to suggest rewriting something to be more efficient and less error prone, but not necessarily offer new functionality that would influence reader behavior.

In addition to ideas about how to optimize software and make it more stable, the development team is also responsible for creating new features and ways of interacting with the biblical text and surrounding resources. Members from each team mentioned that they gained valuable insight from listening to their users and studying their data, but they also strongly argued that, in certain cases, their development teams needed to create things that customers would never ask for. One member of Faithlife team made this quite explicit in the following statement:

> You probably heard the classic thing where Henry Ford said, "If I ask the customers what they wanted, I would have to build a faster horse [chuckles]." The customer can't look around a corner, the customer can only look at their problem. So we also make some features up basically because we can.

The phrase "because we can" embodies the HEP orientation, but in the context of the interview, this statement was not meant to be demeaning to users or to argue that the developers always know best. Rather, this statement appeared to be intended to draw a contrast with a prior example the speaker had just given in which his team collected customer feedback that led to the design of a new product feature. By pairing examples of both together, he wanted to show that both customer feedback and developer instincts are vitally important to the success of their company. Neither by itself would be adequate for creating a commercially viable Bible software application. After several more examples, he closed with the following, "You definitely have to keep talking to the customer, but you also have to keep coming up with things the customer would never think of."

For most of the interview, the team members spoke of their coworkers in largely egalitarian terms, saying that ideas came from all levels of the organization. But as they offered more detail about how ideas originated and propagated through the system, they also revealed that there are distinctions within their organizations between employees at different levels and between different internal business units. For example, one of the team leaders at Bible Gateway spoke of balancing and prioritizing the needs expressed by their parent companies Zondervan and Harper Collins. The team leader laid out the complexities of sifting through these multiple sources:

> We have a number of, if you will, I guess stakeholders in the process of product development for Bible Gateway… Ideas for next iteration, next phase, next sprint, may come from the development guys. It may come from … from the business development guy at Harper Collins. It may come from an advertiser. It may come from a user … So yeah, we start with where do we want to go? What do we need to accomplish? And again, that's a combination—me filtering through what do the users want? What do my corporate stakeholders want, and how do we match those together? Where do our overarching goals and objectives need to be? They vary from user growth to revenue growth to developing solutions from an infrastructure perspective that support other people in our company. So sometimes Harper is the client and we have to develop something for them.

This passage is only a small part of a larger conversation detailing how she and her team spend considerable time "filtering" and weighing inputs, requirements, and requests as part of their process for creating a roadmap of new features. She mentioned the two obvious sources, end users and the development team, but here she also adds additional inputs such as "advertisers" and "corporate stakeholders," thus expanding the scope of *relevant social groups* in the SCOT approach. Although we did not discuss any specific features that Harper or Zondervan asked Bible Gateway to create, this statement indicates that the orientation of the team toward their parent company is that of one of many "clients" which also include end users and advertisers. From the tone of discussion, there did not appear to be any antagonism toward Bible Gateway's parent company nor was there any mention of conflicts between the various business entities, only that the team had a responsibility to weigh and assess a variety

of inputs in their decision-making process. In her wording, there are times when her team "has to develop something for them [Harper]," but they were also free to determine how to go about doing so and how it might fit in with their other responsibilities.

The YouVersion and Logos teams also mentioned parallel instances where a corporate goal might drive a feature in a way that might have unfolded differently if the process were purely driven by developers. For example, Bible Gateway has decided to forgo including any social features in their application (they spoke about wanting to focus on the individual's spiritual growth), but both Logos and YouVersion implemented social features based on the goals of their leaders. In the case of Logos, they mentioned having a "collaborative notes feature" in early versions of the software (circa 2002) which they envisioned as a place where customers "were going to have deep theological discussions and take collaborative notes in their Bibles." However, they later disabled the feature because "it ended up being really a lot of people yelling at each other and then complaining about how slow it was."[20] But over the years, as Logos sought to expand into new markets by developing additional software applications such as Proclaim and Vyrso, it eventually reorganized under the name Faithlife and created a new social networking system to help integrate its products together and keep customers within its ecosystem. In this case, the social functionality was driven by the larger corporate needs rather than a developer's ideas about how to make better Bible software.

The YouVersion team leader also spoke of several different attempts at creating social interactions within their app, but not because of corporate oversight or cross promotional goals. Instead, it was based on the instincts and theological beliefs of YouVersion's founders that engaging the Bible alongside others was an important part of a faithful Christian orientation toward scripture:

[20] This feature was similar to YouVersion's 2006 website experiment with collaborative notes covered in the previous chapter.

> It's not because it's Facebook … what drove us there originally, is that we had no data, but we just intuitively figured that if people are doing this [Bible reading] with their friends, they're going to be driven to do it more. That was kind of our intrinsic—we just believed that. I don't think that's a new concept. I actually think that's how the Bible originally started.

Here, the leader seemed compelled to argue that adding social features to YouVersion was not merely an attempt to mimic a feature in a nonreligious application (Facebook). This may be because, in some parts of evangelicalism, it is considered negative for a church to simply "copy" something being done in the broader secular culture,[21] and some Internet writers worry that "the church is behind on technology" (Schoeman, 2012) rather than at the forefront. Instead, he argued the reason why they persisted in multiple attempts at social features, even when early versions of the feature failed to be adopted by their users, was because the leaders had an intuition based on their beliefs about the Bible and Christian community. When version 5 of the application was released in 2014, YouVersion released several blog posts explaining why they felt that they had finally gotten the social features right:

> Sharing the Bible with friends every day is a beautiful thing. It's how Scripture was first experienced thousands of years ago—within community. We developed Bible App 5 to help you bring your closest friends into your journey with God through the Bible. (2014b)

This blog post echoes the leader's statement that the Bible was meant to be experienced in the context of "sharing … with friends" because that is "how the Bible originally started." In these statements, we can observe how theological beliefs about scripture and Christian community are melded together with technological intuition. Even when the feature failed to catch on in earlier versions, their conviction coupled with the entrepreneurial spirit of techno-evangelicalism led YouVersion to keep iterating until it eventually worked. The legend of Thomas Edison says it took him hundreds of attempts to create the first functioning light

[21] See Crouch's (2013, pp. 78-100) five orientations toward culture, mentioned in chapter three, one of which is "copying."

bulb, but it only took YouVersion until their fifth version to create something that worked for users, whose feedback we will consider in the next section.

User Feedback and Analytics

In the social shaping of technology paradigm, technological change is driven not just by producers, but also by the users of the product. This happens through direct means, such as when users offer verbal or written feedback about a product and indirect means when technology manufactures observe how a product is being used, possibly in a way they did not expect, and then adapt the next iteration to meet the users' desired functionality. For example, when mobile phone makers began adding cameras to smartphones, they soon found that users wanted to take photos of themselves, so the manufactures added front-facing cameras to newer phones, and thus the "selfie" was born (E. Day, 2013; Wood, 2014). Similarly, the history of Twitter is one of users inventing new ways of using the service including @replies, #hashtags, and retweets, and the company responding by incorporating those features into their product (Rocherolle, 2019; Seward, 2013).

Similarly, all three development teams mentioned that users are one of their key sources for ideas on improving their product, and that they received these ideas through a variety of channels. In the 1980s, when the first commercial Bible software was introduced, companies had to rely on hand-written letters or face-to-face feedback at conventions or in focus groups. Then, in the 1990s, the Internet allowed companies to use their website to gather immediate feedback on technical problems, translation issues, or feature suggestions. Some companies also created customer message boards where the company could announce new or updated products and customers could offer feedback and discuss feature requests. In the era of mobile apps like YouVersion, these feedback mechanisms are still available, but the creation of Apple's App Store (and Google Play Store) introduced a new method of feedback—user reviews. Apple users are encouraged to leave a review in which they rate the application from

one to five stars and offer comments, highlighting things they enjoy and suggesting areas of improvement. Companies can assess these reviews and make changes to the app that fixes bugs or introduces new features. Apple incentivizes releasing new versions of an application by hiding older reviews that might discuss a bug and featuring reviews on the most recent version of the software. Another significant source of indirect user feedback comes in the form of analytics, where companies track user behavior, which can uncover patterns of behavior that neither the developers nor the users themselves anticipated.

The interviewees indicated that they had developed mechanisms to incorporate each of these sources into their feature prioritization process. For bug reports and textual errors, acting on feedback is relatively straightforward, but the Faithlife team also mentioned that they hold regular focus groups for pastors where they ask questions, not only about what features the pastors want in Bible software, but also about the pastor's day to day activities.

> [We ask], "What's your problem? How can I help you solve it?" and generally what we've found is it works best if we ask them either what problems they're having or even ask them what they do, and then we come up with ways we can improve, and then they do. So a classic example that would be—and a number of the times in the history of the company had focused group meetings with pastors, and even just a couple pastors, and say, literally—what do you do on Monday morning? And then what do you do on Tuesday morning?

The Faithlife team found that asking these kinds of questions about the duties of being a pastor often triggered an idea for a new feature that might address what the pastors talked about. The Faithlife team offered the example of a group of pastors who said that their biggest weekly task was: "I have to decide what am going to preach on." Before this conversation, the Logos team had only thought to create study features that would help pastors after they had selected a particular passage or topic, but this feedback prompted them to create a new tool that suggests sermon topics. A pastor can enter in a topic or a passage he or she wants to preach on, and Logos suggests several outlines and approaches to covering it in a sermon. In a second example, another group of pastors said, "I spent either Friday or

Saturday looking for media to put on my slides during my sermon." The Faithlife leader said, "That was a clue to us that we should put more media integration in, so we went and picked out features that made it easier for them to find media that matched the sermon topic." Today, on the Logos startup screen, there is a series of tiles that highlight various resources, and one space is devoted to a visual representation of a passage of scripture. It appears as if this feature was created as a subtle way to respond to the pastor's desire to more easily find media for their sermons, and also encourage other users to try the new features.

In addition to responding to direct user feedback, the era of Internet and mobile apps enables software companies to log every click, tap, and scroll that users perform and use that data to discover things they might not be able to find out through direct inquiry. Analytics has come to be one of the most powerful drivers of the social shaping of technology process,[22] and all three teams gave examples of studying user data patterns as a means of making informed decisions, some of which went against the instincts or preferences of the team. In a discussion with the Bible Gateway team about their 2014 website revamp, they mentioned that much of the redesign was based on a "massive data project" that looked at factors such as the paths users took through the site, where they tended to go back to, and what terms they searched for. They also studied user preferences, offering users a choice of six different font choices for displaying biblical text. The designers carefully chose several fonts they felt were aesthetically pleasing and technically suited for screen reading. However, after studying what users chose, they found that, much to the designers' chagrin, the "data shows [that] the ugliest one wins." This serves as a fairly clear example of Bible readers shaping a Bible reading technology, even when their preferences went against the desires of those creating the technology itself. After offering this example, the team member reflected on the dialectic

[22] Companies like Facebook and Google are regularly in the news as users and advocacy groups express privacy concerns about the way they use data (Cadwalladr & Graham-Harrison, 2018; Hautala & Nieva, 2018).

of user data and developer ideas, saying, "those kinds of things are absolutely driven by data all the time, as much as it's possible. Not that we don't have instinctive, invaluable additions to make, but we do rely as much as we possibly can on the data." In these cases, the development teams are still in control, and they have a choice as to how they are going to act upon user feedback and behavior patterns, but they have decided that it is in their best interest to adapt to their customers' preferences.

The Faithlife team also brought up the role of analytics in their business when I asked about a specific software feature that had recently changed at the time of the interview. As mentioned in chapter one, by default, Logos's mobile app for smartphones displays text as "pages." When a user swipes horizontally left or right, the app displays another page, similar to interacting with the pages of a print book. This is the user experience of most eReaders, including the Amazon Kindle and Barnes & Noble Nook. However, most other Bible apps and websites employ a vertical scrolling system which displays one chapter of the Bible at a time (as YouVersion does) or displays continuous chapters (as Bible Gateway's app does) using what is sometimes referred to as an "infinite scroll." In my own personal experiments reading the Bible on a smartphone, I found that infinite scrolling was helpful for looking up a single passage and scanning the surrounding text, but it was laborious for reading longer passages. If I read for more than ten minutes at a time, I found that a paged interface like Logos's was a better reading experience. But even if the paged interface was superior for long-form reading, as far back as 2011, many users had taken to Logos's message board to ask for an infinite scrolling option.[23] In late 2014, the Logos team added the vertical scrolling option and announced that they had done so in direct response to user feedback (Vaniman, 2015). One of the interviewees said, "There were people who just loved infinite scrolling and

[23] Douglas (2011, October 1). Smooth scrolling. Retrieved from https://community.logos.com/forums/p/38920/338605.aspx.

told us that was the one reason they were using YouVersion or some other product, and so we went back and added that as an option." This example fits under the category of direct user feedback and offers an example of what SCOT calls *closure and stabilization*. The team also mentioned that they had been using analytics data to study why users were choosing infinite scroll over paging by studying what they did in the two reading modes. They discovered that while horizontal paging is helpful for reading, it makes it difficult to highlight a section of text that carries over onto the subsequent page. In this case, the developers had wanted to create an excellent reading experience, but user feedback and data showed that they were more interested in an environment that favored other forms of engagement like studying, highlighting, and sharing. Again, this shows the complex shaping and negotiation process between developer instinct and the actions of their users. Mcloughlin argues that this kind of interaction indicates that it may be helpful to "discontinue drawing such a priori distinctions between the 'technical' and the 'social'" and instead to view them through the metaphor of a "seamless web" of interactions (Mcloughlin, 2002, p. 97). However, while we will continue to observe a deep interconnection between user and developer, it is not entirely seamless and is still driven by the priorities and choices of the software companies.

When I asked the YouVersion team about their use of analytics, the team member said that their primary interest is in finding ways to drive increased Bible engagement.

> We've got billions and billions of rows of data that we try to sift through to really help us understand how users are engaging and what are the catalytic things that if someone does this, then it is going to produce more engagement results.

As mentioned above, one of the features that YouVersion focused on was how they could encourage users to interact with their friends within the application. Their theological instinct told them social Bible engagement was essential, but the data and feedback indicated that users did not like it their initial attempts. However, YouVersion indicated when they released the fifth version of their app, the data showed that users were increasingly adopting the social

features and, further, that the data offered some specific insight into what kind of social relationships were most likely to increase Bible reading. Their data analysis indicated that users with at least one friend engaged with the app at higher rates than those who had no friends, and they also found another increase in engagement when people had seven or more friends. This led them to do more to highlight the social features in the application. "We spend time working our best to help you, remind you, and give you on-ramps to the friends [feature] because the data tells us that if we can get you to seven or more, then the odds go way up that you're going to spend more time reading the Bible." YouVersion gave additional examples of how they were studying user note contributions and verse images to see how much they were used depending on where they placed them within the app and how that placement affected Bible engagement. Today, when a user first opens YouVersion, it does not open directly to the text of the Bible. Instead, it starts with a "Home" tab that highlights many of these social features, such as displaying the reading habits of friends, showing a verse of the day one can share on social media, and suggesting reading plans designed to keep users coming back to the app.

Interestingly, it appears that YouVersion's user analytics show that the best way to increase and sustain Bible engagement is not to start with the Bible alone, but to start with social features and reading plans that connect to the user's larger world. One way to read YouVersion's decision is that it is somewhat non-evangelical in that it puts the Bible in second place (literally the second tab on the app). Another reading, however, would be that this is consistent with the idea that there is a social world around the Bible that undergirds evangelical culture, and that YouVersion's data shows the necessity of leveraging the social side of religion as much as its textual side. At the same time, when I asked how they went about creating their verse of the day list, the YouVersion leader said, "It's probably not very theologically oriented" and explained that initially, he combined several lists he found online.

Later, he and his team adjusted the list to take into account Christian holy days throughout the year, and then began to adjust the list to include passages they found were among the most highlighted and shared verses throughout their app.

In some respects, this is similar to Logos and Bible Gateway incorporating user feedback to add infinite scroll or choose a font, respectively. However, YouVersion's verse of the day list goes beyond those user experience issues and actually allows users to participate not merely in the shaping of the technology, but in the kind of spirituality it emphasizes. Phillips (2019) argues that digital Bible users tend to share Bible verses that are more consistent with Christian Smith's Moralist Therapeutic Deism (MTD) such as Philippians 4:13 than theologically oriented passages like John 3:16. It is possible that YouVersion's choice to highlight popular verses is forming a feedback loop that privileges MTD passages which, in turn, further reinforce MTD viewpoints. Some evidence of this can be found on Bible Gateway's blog which, in 2009, reported that the most popular verse was John 3:16 (Rau, 2009), but by 2018 it had fallen to second place, and Jeremiah 29:11 became the most popular verse of all time on the website (J. Petersen, 2018b). These shifts may be viewed as both a reflection of and a result of evangelicalism's tendency to emphasize the individual and his or her personal faith, as well as its tendency to lean into "what works" over what might be more theologically grounded.

It also hints at ways in which the larger technological environment can shape spirituality. Sharing decontextualized verses is not new within Christianity or evangelicalism, but the user experience of social media platforms reinforces the tendency to only share one verse at a time. Twitter originally allowed only 140 characters which rarely allows for more than one verse, and Instagram posts tend to emphasize a photo rather than large amounts of text. Both of these platforms, then, prioritize sharing verses with visual and emotional impact rather

than complex concepts. In the following section, we will consider other ways that these elements of the larger technological environment shape the process of making Bible software.

Technological Milieu and Research

In the discussions above, ideas came from either individual members of the software development team or users offering their opinions and feedback. This might seem to imply that ideas for Bible software came *ex nihilo* from the pure creativity of developers and users. In reality, however, the teams indicated that many of their ideas came and continue to come from their immersion in the larger technological world of hardware, software, and innovation, or what the SCOT approach calls the *wider context*. They openly indicated that some of their most important sources of inspiration came from looking at other applications and conventions outside the Bible software industry. One of the senior leaders at Faithlife made this explicit when he said:

> I actually spend time looking at what other people are doing, looking at what's happening in research, in information retrieval, visualization. We have, I'm embarrassed to say at times, looked at something someone else has done in another field and said, "That just looks so awesome, is there a way we could apply it to our field?"

He went on to give additional detail:

> One guy told me about his interest in something, and I think I misunderstood his area of research, but it made me think [chuckles], well, it would be kind of cool if you could find stuff in the Bible with just other examples of this type.

He offered additional examples of researching new software techniques that might be applicable to Bible software from taxonomies in academic fields such as anthropology to visualizations used by news media organizations. Note that this is distinctly different than YouVersion's instinctively theological approach to implementing social engagement where they built it based on a sense that it was a fundamentally Christian form of Bible engagement ("we had no data, but we just intuitively figured that … they're going to be driven to [more engagement]"). Where YouVersion showed an evangelical theological instinct that prioritizes

community and engagement, Logos's study of other software demonstrates the willingness of evangelicals to optimistically seek out new technology that it can absorb for its own purposes. Faithlife does not allow worries that any of these innovations could be spiritually damaging or have a negative tradeoff slow their process. Instead, they seek out technology that looks "awesome" and "cool," and then see if it works.

Another example of the way the larger context of technological development can shape Bible software that also highlights the occasional separation of lower level developers from higher level managers comes in YouVersion's move from a "hamburger" menu system to a tabbed based menu system. When Apple first started allowing applications in its App Store in 2008, one of their standard app navigation paradigms was to have five buttons in a row at the bottom of the screen. Apple used this tabbed metaphor in many of its preloaded applications, and early developers—including YouVersion—followed the standard. Soon, however, some developers wanted their applications to have more than five functions, and they felt that the bottom row of tabs took up too much vertical space, so they adopted a new navigation method called "hamburger" menu which is three stacked horizontal lines (☰) in the upper right or upper left of an application. Major companies like Facebook, Spotify, and YouTube employed the three-lined menu, and YouVersion also began using it, which enabled them to introduce new features over time. But after several years of experimentation, the design community began to feel that the hamburger menu was not a good experience because it made navigation more difficult for users and hid the application's core functionality.[24]

At the time of the interview with YouVersion, I noticed that the application had recently removed the three-lined menu and gone back to the bottom tabbed menu, so I asked the YouVersion leader about the change. He commented that it was actually the development and design team (i.e., not the leadership team) which had noticed the change in other popular

[24] Lindemann's (2014) work serves as an example of this design discussion.

apps prompting them to begin researching user interaction. This led the developers to feel that the hamburger menu was a bad idea and that YouVersion should adopt the now popular tabbed interface. The leader recalled, "On the hamburger menu, our designers have hated the hamburger menu for years—hated it." But the management team was reluctant to include the menu change on the product roadmap because they had other features in mind, and changing the menu might interfere with those priorities. As the leader put it, "my concern [was that] we've navigated projects like this in the past where it'll derail the entire direction of the app for a year… We've got a long road map of things that we *know* will help Bible engagement." But the YouVersion team has designated certain weeks of the year for developers and designers to work on any features they personally want to implement, and the team decided that they would use this time to rework the menu system. "Probably for a year, they have been on the down-low without me knowing about it, redesigning the entire app." When the time came to decide whether or not put in the additional work it would take to move it into the production application, the senior leader took a pragmatic stance asking his team, "Help me understand the ROI… How are you asking me to shut all of that down to go make the app prettier?" They responded by showing their research, which included articles showing that tabbed menu led to "increased engagement" in other applications. That key phrase—"increased engagement"—along with research to back it up was enough to convince the YouVersion leadership that it was worth the additional time to make the change.

In the YouVersion menu example, we see all three of the above categories—ideas from the development team, feedback from users, and the wider context of software techniques and methodologies—interacting to produce a change in the Bible app. This example continues to indicate that digital Bible features arise from an interwoven tapestry of technology, theology, experimental innovation, and, as we will see below, financial needs. No one source appears to govern the direction of any of the companies. Instead, they go through a process of

filtering and prioritizing many competing desires and needs, sometimes favoring their instincts and sometimes leaning toward more rigorous research and data analysis. In the words of the YouVersion leader, “How do we just see what God is blessing and what He’s on and just get behind it?” And yet, to continue doing God’s work in the area of Bible software requires ongoing sources of capital, and in the next section, we will consider how the business models of each company affect their process and product.

Profit: How Does Bible Software Sustain Itself?

Thus far, we have seen that the members of the software teams are deeply evangelical, that the teams are interested in promoting Bible engagement for the purpose of changing lives, and that they draw inspiration from a variety of internal and external sources. In this final section, we will examine one of the ways in which all three of these factors interact with one another by assessing the different financial models of each company. What we will see is that the evangelical emphasis on Bible engagement plays a dual role in the life of these companies, and that spiritual growth is often intertwined with economic sustainability.

In the origin stories of the Bible software companies represented here, each of them began without a clear financial model. In the case of Logos, Bob Pritchett created his first Bible software application in high school for fun and later offered early versions of Logos as shareware (where payment was a kind of “tip” rather than a required transaction). Bible Gateway also began as a free (and ad-free) experience on Calvin College’s web servers. YouVersion, too, was an experimental website from within Life.Church’s large technical division. But over time, each of the Bible applications had to find a revenue stream that could pay for employees, servers, Bible licenses, and other expenses. For Logos, which began just before the Internet went public, the business model became straightforward software and content sales. They are sustained both by the initial purchase of their software library system

and by ongoing purchases of additional books and recourses.[25] Bible Gateway, however, began as a free-to-access website. As one of the first Bible websites, its popularity grew quickly and, with that popularity came rising hosting costs. This led its first parent company, Gospel Communications, to place ads around the Biblical text for other Christian products. Today, ads remain one of its primary revenue sources.[26] YouVersion has an entirely different financial model based on relationships with publishers and support from major donors. They were initially funded by Life.Church and are now supported by a variety of donors. As mentioned in chapters one and four, one of the most prominent of these donors is billionaire David Green, founder of Hobby Lobby, who has spent much of his fortune on Bible related, including Museum of the Bible (Moss & Baden, 2017) and YouVersion.

So what do these very different profit systems—sales (Logos), advertisements (Bible Gateway), and donations (YouVersion)—have in common and how do they influence the features of their respective applications? As we have seen above, all the companies have a shared belief in the supernatural quality of the Bible and that increasing Bible engagement, through any form or any technology, is good for spiritual growth. But as we will see, increasing Bible engagement on their software platforms results not only in life change, but in financial stability. For Logos, increasing the number of people who engage with their software or who buy additional products results in additional revenue. This ensures the company's long-term sustainability, which in turn allows users to continue using their product and engaging scripture. For Bible Gateway, the longer a user stays on their site and the more content they view, the more ads they see and the more revenue they can bring in. As with Logos, this revenue from Bible engagement sustains the company and allows for more Bible engagement in the future. For YouVersion, however, there is no direct transaction with

[25] In 2016, Faithlife began offering a new product called Logos Now, a subscription service that reduces the upfront costs of using their software and accessing their content.

[26] Bible Gateway also offers users the chance to pay for access to additional books and a monthly payment plan to access resources on demand.

a customer and no ads on its website or in its apps. But they do regularly report on their blog, through email newsletters, and other outlets how much Bible engagement is happening using metrics like millions of users, millions of downloads, or billions of minutes spent reading (YouVersion, 2014a, 2015, 2019). This is presumably designed not only to encourage their users, but to validate their work to their donors, who, in this case, function like customers. With Logos, the paying customer is the Bible reader, and their personal experience with the product determines whether they will return or choose another product. With Bible Gateway, there is a similar connection with the reader, but the actual paying customer is the advertiser, whose desire is that Bible readers will not only see an advertisement, but click on it and purchase a product. Similarly, YouVersion has a direct relationship with its reader, but the paying customer is the donors who sustain the operation.

As we noted in chapter three, several scholars have explored the complex relationship between Christianity and financial success, or more specifically, evangelicalism and capitalism. For example, Hayes, building on the work of Max Weber, traces how evangelicalism arose alongside American capitalistic enterprises and came to embrace and incorporate their ideals through the late nineteenth and early twentieth centuries (Hayes, 2012). This can be seen in the recursive loop of Bible engagement for spiritual growth and Bible engagement that sustains profits, which in turn allows for more Bible reading. This all recalls Connolly's concept of the "evangelical-capitalist resonance machine" in which evangelical values and capitalism reverberate and reinforce one another.[27]

The connection between finances and faith for Bible software companies also emerged when I asked the teams how they defined "success" at their companies. Their answers fell

[27] Connolly also suggests that evangelicalism has a sense of resentment and desire for revenge that maps to capitalism's sense of entitlement and disregard for others. However, this sentiment was not detected in the interviews, and some of the interviewees seemed more likely to fit into Connolly's "dissidents on the edge of the machine" (Connolly, 2005, p. 883). In particular, comments from the female executive in this study seemed to follow Ferguson's (2011) argument that evangelical women do not conform to the same patterns.

into three categories: engagement, outreach, and profit, which were often combined and intertwined with one another. The first two—engagement and outreach—closely align with an overall sense of Christian mission and identity that we have already observed,[28] while the third—profit—is driven more by the reality of managing a technology company with operating expenses. It is this third category where the three companies under discussion varied the most from each other, based on their respective business models.

The three categories were first demonstrated in a conversation about "success" with the team from Bible Gateway. When asked about how they and their company define and measure success, three team members answered one after another, each pointing to a different measure of success. A programmer answered first in terms of Bible engagement and enjoyment:

> Success for Bible Gateway is, I guess from my perspective, people using Bible Gateway and engaging with the scripture, and enjoying it. Getting God's Word—I think that's success right there.

This initial response did not include a detailed description of what "engagement" means, nor was it an expression of Bible Gateway's business model. Rather it seemed to function as an initial reinforcement of the basic evangelical belief in the overall importance of regularly connecting with scripture. He also emphasized that reading the Bible should be "enjoyable," perhaps echoing the contrast between "religion and relationship" commonly made by evangelicals.[29] I initially planned to ask a follow-up questions that would press more directly for information on how this understanding of success related to their financial model. But after this preliminary reinforcement of evangelical ideals about Bible by the programmer

[28] Including Campbell's emphasis on mission and evangelism in evangelical discourse on technology. (Campbell, 2010, p. Chapter 6)

[29] This also seems to align with Bebbington's concept of "conversionism" where religion is not seen primarily in terms of religious practices, but in a conversion event that initiates a joyful relationship with God. Ritchie (2008) explores the "relationship not religion" from a charismatic perspective.

above, another team member began discussing their business model openly, including the need to increase their readership year over year.

> As a for-profit company, we do care about ad revenue and people buying products from our affiliates on Bible Gateway. So, making money is probably, certainly a measure for our success, as well.

However, this acknowledgment of a profit need by one developer was followed quickly by a reassertion of a more distinctly Christian identity by another developer who espoused Bible Gateway's function to reach globally to people without access to a printed Bible in their language or who were not born into the Christian faith.

> One thing that I kind of had more of a personal connection with, because it's something I had spent a lot of time working on, was I think our global reach … it's rewarding to think about a group of people that wouldn't be able to find scripture in their language and on the Internet before, and they can now … When you think about when Jesus talked about what things are going to start looking like and about the Gospel going to every corner of the Earth, I feel like what we do is, maybe playing a huge part of that in the 21st century.

In the exchange above, there was a movement from an overall ideal (engagement) to the financial model (advertisements) and back toward the broader mission (outreach). One might presume that the third movement was a kind of justification of the second point, but from the developer's tone in the interview, it did not appear that he was uncomfortable talking about the need to generate income. That is, the shift from ad revenue back to evangelism was not a way of deflecting from the financial reality. Instead, this transition seemed natural, and he was excited to see the connection between engagement, outreach, and funding. When they see increasing numbers of page views, that means there will be revenue for the company to continue its work encouraging more engagement and deeper outreach.

The Faithlife team was also very comfortable talking about how they think through building profitable tools. When I asked about whether or not they would consider building additional apps or features might encourage new forms of Bible engagement, one senior leader responded by saying:

> If we can make the economics work, we'll probably build just about anything. We think of that as a stewardship issue. That what we have is an opportunity to serve the church, to serve our market and to glorify God, and we have a certain amount of resources that we have to put toward that activity.

Here again, we can observe the direct connection between creating functionality that increases engagement and building systems that increase sales. At the same time, while "economics" is a reality for a for-profit company like Faithlife, their Christian identity also means that they simultaneously see their work in terms of service to the church and ultimately to "glorify God." They view the revenue they receive from sales not in terms of personal or corporate financial gain, but as a kind of spiritual "resource" that they are responsible to "steward" for the purpose of encouraging more people to engage with the scriptures. Another Logos employee added that profit was a means to an end, not their sole motivation: "We could be making banking software or insurance adjusting software … and make a lot more money … than the Bible, but this is meaningful." They also made it clear that part of their responsibility to steward what God had given them was to use every tool available as a means of encouraging more engagement and more sales.

For example, they indicated that many users buy digital books "aspirationally"—which they call a "treadmill purchase"[30]—but then leave those books largely unused in their digital library. Sometimes, those customers stop using the software altogether for weeks or months at a time. Faithlife has created a system that tracks user engagement, and when it detects decreased usage, it triggers an email to the customer alerting him or her to discounts, new products, or new features, depending on what has been algorithmically determined to bring the user back into engaging with the software. Interestingly, the term "engagement" in this instance is used simultaneously for both the software itself (Logos) and for scripture and other religious content.

[30] Many customers purchase a treadmill intending to use it, but then do not.

> We have in our commerce system a pretty sophisticated acquiring engine so that we can find the people who haven't logged in the last 30 days, so we can offer them a discount or we can offer them training … we can go and re-engage with those folks.

The term "engagement" in this instance has a dual meaning, referring both to religious engagement with a spiritual text and to a financial transaction with a software product. Interestingly, the language of "conversion" also takes on a dual meaning, as it moves from religion to sales and back again. One of Bebbington's four pillars of evangelicalism is the concept of a spiritual "conversion" (Bebbington, 1989, p. 2) or the experience of being "born again" which represents a kind of spiritual transaction (Leonard, 1985, p. 113) where a non-believer takes a step (generally through prayer) that transforms him or her into a genuine Christian believer. This transactional sense of "conversion" was later picked up by the technology sales world and incorporated into its vocabulary for defining the success of online products and services. eCommerce companies compete on their ability to deliver maximum "conversions" (sales transactions), and consultants offer services guaranteed to "increased conversion rates." It is not surprising, then, that when discussing business strategies for "re-engagement," one of the Faithlife business leaders would say:

> Those [email acquisition techniques] have been actually pretty successful, we do *reconvert* people now and then ... They buy a store product, or they get it for gifts, and six months later they still have that desire to do Bible study." (emphasis mine).

The term conversion (or "reconvert") in this context has moved from the religious realm into the business realm and then been reabsorbed back into the sales of digital religious products, used fluidly as both a commercial and religious activity. This appears to be another example of Connolly's resonance machine, that includes not only evangelical companies adopting business language, but the business world repurposing religious language in a secularized world.

YouVersion, as we have seen, has a very different financial model in that it is largely sustained by donors rather than users or advertisers. But some of its features indicate that there is a deeper connection between its funding model and evangelical publishing businesses. On the Home tab, YouVersion displays content from what it calls “partners” such as devotional Bible reading plans developed by popular Christian authors and videos from musicians, teachers, and other ministry organizations. As I understand this model, the partners either offer their content to YouVersion for free in exchange for a link to purchase their products, or they pay YouVersion to have their content featured in the app. In this model, first a ministry receives a donation to create and distribute Christian content, and then some of that donation is funneled up to YouVersion for the distribution of the material. YouVersion reports back to the ministry how many people have engaged with the content (this number is also publicly displayed within the YouVersion app next to each reading plan), and then the ministry can report that number back to its donors. This model demonstrates another way in which the religious and social web around YouVersion and other Bible apps is very complex and interwoven with other aspects of evangelicalism. The model is not simply software creator and end user. Instead, there are multiple layers within and around the organization, influencing which features are prioritized and which ideals might never be implemented. There is also a recursion between engagement and sustainability, where YouVersion determines how successful content from their partners is by looking at whether or not it increases Bible engagement, and that engagement is likely to in turn produce sales for the ministry that produced it. These sales then allow them to produce more devotional material which they and YouVersion together hope will lead to more changed lives.

The Digital Bible as Evangelical Mission

In this chapter, we have taken steps toward answering the key questions of how Bible software developers are influencing the reading behaviors of Christians by looking at how

their evangelical identities, from the developers up through the management, contribute to the social shaping of three of the most widely used digital Bible platforms. We have seen that the interviewees had deep relational and experiential ties to evangelical institutions and churches which led them to adopt an understanding of the Bible that prioritizes increased scripture engagement with the goal of leading to spiritual progress and life change. They also embodied the Hopeful Entrepreneurial Pragmatism (HEP) orientation to technology, business, and ministry, combining their open attitude toward forms of Bible engagement and their optimism about new technology, giving them freedom to incorporate a variety of streams into their development process. This includes their own theological instincts, as well as the behavior of their users and ideas from the wider context of the technological world around them.

We also saw that the business model for each company plays a significant role in what they do and that, though the models differ, they share a common resonance between Bible engagement and financial sustainability. But rather than functioning as a kind of cynical instrumentalism that we saw in the realm of politics, the development teams openly connect Bible engagement and business income under the rubric of biblical stewardship, seeing themselves as following Jesus's direction in the parable of the talents (Matthew 25:14–30) and Paul's example of funding his ministry of the gospel through both donations (Philippians 4:13; 2 Corinthians 2:9) and the business of "tent making" (Acts 18:3). Brandon Donaldson, pastor and Open Digerati Director at Life.Church, summarized this approach at a recent conference in which he said, "YouVersion is not a technology; it's a Bible engagement mission."[31] In the following two chapters, we will see the other side of the social shaping

[31] In his presentation, Donaldson also invoked the parable of the talents. Faith Leads Tech, Nashville, Tennessee. http://faithleads.tech/, November 9, 2018. I also presented at this conference.

paradigm looking more closely at the ways regular Bible readers use Bible software in their spiritual practices and how this influences their relationship with scripture.

CHAPTER 6:

A PORTRAIT OF EVANGELICAL BIBLE READERS

In this chapter and the one that follows, we will begin to examine the user side of the social shaping of Bible technology, shifting our attention from the way evangelical biblicism and Hopeful Entrepreneurial Pragmatism function among developers to the way the products they created shape evangelical readers.[1] We will see that Bible software replicates and upgrades some functionality that exists in printed Bibles, and that, using the language of "technological affordances" developed by Ian Hutchby (2001),[2] it also enables new forms of Bible engagement. These changes require evangelical readers to learn how to negotiate decisions about which medium they should use for different purposes or in different situations. We will see that, on the one hand, Bible software has allowed readers to engage the Bible more often and in more forms, but the data also suggests that, in some cases, using Bible apps works against the values of the evangelicals using it. We will also be forced to wrestle with the question of the extent to which can we attribute these changes to Bible software itself (and the evangelicals who make it) or to the hardware on which it runs, particularly the phones that are now a fixture in 21st century western society.

The participants in this study displayed diverse opinions and behaviors, but they also had two important things in common. As evangelicals, they shared a deep regard for the scriptures in their lives, reading the Bible at much higher rates than most practicing Christians. And, to varying degrees, they also displayed elements of Hopeful Entrepreneurial Pragmatism in the ways they talked about technology and navigated choices about Bible media. We will see that there is a complex relationship between the hardware (a phone), the

[1] Some of the data in this and the following chapter were incorporated into a journal article (Dyer, 2019), published between the submission date and Viva of this thesis.

[2] Though Hutchby posits his work in contrast to social shaping of technology which he sees as too focused on the social, he too, sought to chart a "third way" between determinism and instrumentalism.

software (Bible app), and the environment (social situation), all of which affect the choices of the participants. At times, participants would be very reflective, discussing how they chose a medium (print, phone, or computer) based on how it might help them perform a desired type of Bible engagement (devotional reading, study, audio, etc.). But the same person might also mention that in other cases, they choose between print and digital formats based purely on convenience, selecting what might be called the Nearest Available Bible (NAB). This pragmatic decision making mirrors the words of an interviewee in a *USA Today* article on digital Bibles who said, "The best Bible is the one you have with you[, and] I always have my phone with me" (Smietana, 2013). Others, however, had tried using their phones as digital Bibles, but ultimately found it too distracting or difficult to use. Still others preferred digital media for their personal reading but refrained from using it in worship settings or with their children.

Thus, in their decision making, the participants revealed a complex heuristic driven by the individual's values, the properties of the media or device in question, and the environment or goals in the given situation. Layered onto their decision process are several latent evangelical values, including the significance of knowing exact Bible references, the printed Bible's ability to serve as an identity marker, and the belief that the meaning of the text can be definitively known if one reads it correctly or has the right resources.

Focus Group Approach and Summary

As outlined in chapter two, the research approach for studying end users involved five focus groups at three evangelical churches near Dallas, Texas, and incorporated both qualitative and quantitative methods. During each focus group session, the participants were given a description of the research and a consent form allowing them to opt in to the

research.[3] Those that signed the consent form were asked to engage in four activities. First, they were asked to fill out a survey that asked them about their Bible reading habits and the forms of media (print, phone, tablet, computer) that they used for various forms of Bible engagement (devotional reading, study, etc.). Second, the participants were split into two equally sized groups—a smartphone reading group and a printed Bible group—and asked to read the epistle of Jude and complete an assessment of their comprehension of the passage. Third, they were given instructions for engaging in a 10-day reading plan of the Gospel of John using the same medium they used for the comprehension assessment and reporting back afterward with the results of their reading.[4] Finally, the group members were asked to participate in a discussion time where I asked them a series of questions about the place of the Bible in their personal and corporate faith and the ways in which digital media had come to alter and influence their individual and social behaviors around the Bible.

Each of these sessions lasted approximately one hour and took place at the respective churches during a Sunday morning or evening class where the participants regularly gathered for teaching and fellowship. The survey data and comprehension assessments were collected using paper response sheets, and the reading plan data was collected electronically using Survey Gizmo. The focus group discussions were recorded using a TASCAM audio recorder and transcribed by TranscribeMe! human translation service. I edited these transcripts for accuracy and coded them to surface common themes and structural patterns (Merriam, 2015, p. 199; Ravitch & Carl, 2015, p. 248). The quantitative data were entered into Excel for computation and analysis, and the data from the participants was anonymized.

[3] The consent forms, surveys, and assessments can be found in Appendix 2.

[4] As discussed in chapter two, I chose Jude for the comprehension assessment because it takes the familiar form of an epistle, but is not often study or preached on. I chose Gospel of John for the reading plan because it is a familiar text and because YouVersion had a 10-day reading plan of the book.

The first church I approached, City Bible Church (CBC),[5] allowed me to conduct the research with three "Bible Community" groups, each of which had approximately thirty-five men and women in attendance. In the first and second groups, the adults ranged in age from 25 to 45, while the third group had a slightly older demographic ranging from 35 to 60. The second church, Petra Community Church (PCC), had a slightly larger group of forty-five participants with ages from 45 to 70. Finally, Hidden Baptist Church (HBC) had approximately forty participants with the widest age range from 16 to 80. Focus groups are typically much smaller than this,[6] but conducting the study in these settings allowed for a larger overall sample size for quantitative data collection. Of these one hundred and eighty people in all five groups, one hundred and fifty completed all the assessments with usable data.[7] In total, the participants were 49% male/51% female, with a mean age of 45.86 and large clusters in the 30–45 age range and 55–65 age range. When asked how many years they had been a churchgoer or attended church, the average was 35.52 years. When group members are quoted below, some comments have been edited for clarity using [brackets] to indicate these changes. In some cases, two or more quotations are offered together to show common or contrasting themes see across the different focus groups.

In this chapter, we will draw from the survey data asking about their preferred media and group discussions in which they explain why they make these choices. In the following chapter, we will consider the results of the comprehension and daily reading exercises, along with relevant discussion points that add color and depth to the results. What we will find is that although the participants in this study are all regular attendees of evangelical churches and they reiterate important evangelical values such as the importance of regular daily

[5] The names of the churches are pseudonyms.

[6] Kreuger and Casey, for example, argue that the ideal size is "5 to 10 people" and the "size can range from as high as 4 to as many as 12" (Krueger & Casey, 2014, pp. 2,6).

[7] Some did not sign the consent waiver, while others signed it but did not fill out the survey questions or complete the comprehension assessment.

reading of scripture, they also reflect a range of behavior patterns and opinions on print and digital Bibles. Their statements range from those that are very nuanced in their reflections on using technology to those that lean in a more pragmatic or experimental direction, demonstrating a willingness to try new things or use whatever is most readily available. Some placed more weight on their individual goals and preferences while others seemed more attuned to social dynamics including those in a worship service, small group Bible study setting, or with their children at home. Although they all came from evangelical backgrounds, they presented an array of personal and socially constructed values, and their answers reveal that multiple elements are working simultaneously in the religious social shaping of technology. Because of this, we will begin our discussion of Bible software by examining the Bible in its social context.

Social Context: Relationships and the Bible

Bible Reading Frequency

The first question on the survey asked participants how often they personally read the Bible and also how often they would "ideally" like to read the Bible. The participants demonstrated their evangelical ideals about the Bible with 94% of the respondents reporting that they felt "ideally" they should read the Bible "daily" while the other 6% selected "a few times per week" or "more rarely." However, when asked how often they "actually" engaged with the Bible, their numbers were quite a bit lower than their ideal. Only 41% said they did, in fact, meet the evangelical expectation of reading the Bible "daily." And yet, another 46% said they read the Bible at least a few times per week and 9% at least once a week, meaning that more than 95% of the participants said they read the Bible at least weekly. While this may fall short of their ideals, their reading rates are still much higher than the rates for both average Americans and practicing Christians.

Barna found that only 8% of Americans and 28% of practicing Christians reported reading the Bible daily, 8% and 28% respectively a few times per week, and 6% and 13% respectively once per week (Barna Group, 2016, p. 71). Similarly, the American Bible Society's State of the Bible found that only 15% of participants reported reading the Bible daily, 13% a few times per week, and 9% once per week (American Bible Society, 2016). In Table 4 below, the data from this study is compared to the data from other studies.

Table 4. How often should you engage the Bible in some way?

	Ideal	Actual	ABS: State of the Bible	Bible in America: Practicing Christian	Bible in America: Average
Daily	94%	41%	15%	28%	8%
A few times a week	5%	46%	13%	28%	8%
Once a week	1%	9%	9%	13%	6%
More Rarely	0%	4%	63%	31%	78%

It is important to acknowledge that the reading rates in all of these studies are self-reported. However, the question distinguishing between ideal and actual reading rates was designed to mitigate against aspiration reporting and allow for the kinds of qualified responses that Malley found in his work.[8] Even with this distinction between ideal and actual, the data indicates that the participants in this study read the Bible at much higher rates than Americans overall and practicing Christians. These American evangelicals appear to correspond with CODEC's findings on "bible-centric" British Millennials who tend to engage the Bible at much higher rates than less religious readers (Ford, Mann, & Phillips, 2019, pp. 68,73). These above average rates of reading may be attributed to the fact that in addition to attending churches within the evangelical tradition, these participants were also

[8] As mentioned previously, Malley (2004, p. 35) found that many participants reported that their reading had only recently dropped off.

regular attendees of Sunday classes. This indicates that they have a higher level of involvement than “practicing Christians” and that higher involvement with church may have a correlation with more regular Bible reading.

The Bible in a Relational Matrix

The survey data above indicate that the participants in this study are committed, Bible-reading evangelicals. But in the focus group, the participants revealed that their relationship to the Bible goes beyond simply reading or studying it. Many participants spoke of the way in which the physical presence of a printed Bible played an important role in their individual histories and in their social connections, functioning in part as a powerful religious identity marker. In contrast, when they spoke about using Bible software on computers, websites, and mobile devices, these types of connections were discussed far less often, indicating that there is a wide gap between receiving a printed Bible as a gift and having someone show you how to install a Bible app on your phone. In addition, carrying and displaying a physical Bible outwardly marks one as a Christian in a way that having a Bible app on a phone or tablet cannot. Similarly, hand-written notes collected over time portray a certain kind of long-standing Christian character and wisdom that simply having access to study notes cannot. This resonates with Rakow’s (2016) work showing the importance of the materiality of the Bible in liturgical and memorial contexts, and many of the comments of the participants below echo her findings.

For example, when asked why they preferred one medium over another, many participants answered in terms of features, convenience, and functionality, but one participant expressed her preference for her print Bible in terms of how it connected her to a significant relationship:

> One of the things I like about my Bible is that it was given to me by someone and so it feels like, reading it, there’s a relationship there with that person as I’m reading.

This comment is representative of what several others indicated through their own experiences. For all the importance members of the focus groups placed on the tactile nature of print, the power of Bible software, and the convenience of the mobile phone, they also weighted the significance of these differences based on how they experienced them within their matrix of relationships. When discussing which apps they preferred, their conversations often took on the familiar tones one might hear regarding any consumer product such as a car or a microwave. However, when asked about their first experiences with a printed Bible, their tone was more wistful, peppered with personal anecdotes. Some users also had personal connections to the first experience with Bible software, but when asked, "Does anybody remember the very first Bible that they received?"[9] an overwhelming number of members could vividly recall stories of receiving a Bible as a child from a close relative or as an adult from a close friend or romantic partner:

> When I was in fifth grade I got the Bible at my church for perfect attendance for one year.
>
> I received a New Testament Bible when I joined the Air Force in 1955, I still have that Bible.
>
> [My boyfriend, now husband] gave me my first Bible when we were dating
>
> It was given to me for free in college because I didn't have one of my own.
>
> From my mother, when I went away to college.
>
> It was from my grandmother. I just wanted to have one and she gave it to me for Christmas.

Across every group, age, and gender, these kinds of stories powerfully connected the participants to their printed Bibles. In many cases, they continued to use this first Bible into adulthood, but even those who no longer used that particular Bible for their regular reading continued to keep it as a cherished heirloom that held significance beyond the words within:

[9] Malley (2004, pp. 67-68) documented the importance of a "first Bible" in faith formation.

> I got a King James version from my aunt. It's a white Bible with a zipper on it and it was for my confirmation… [I was] Seven or eight. [laughter] Yeah, it's the one I still use today.

Based on scholarship studying the materiality of the Bible, the deep significance they placed on these early Bibles was not unexpected. What was less expected was that when I asked a similar question about their first experience with Bible software, many in the focus groups offered only quizzical expressions and could not seem to recall when they had first used an application. They could recall in vivid details the first printed Bible they had received, but it was as if Bible software was something they were vaguely aware of which had always been around in the background. However, the relatively few people who could recall their first exposure to an electronic Bible often placed the experience in the context of a significant relationship. For example, one adult participant recalled the excitement of her father, a pastor, when he used a desktop Bible application for the first time, some twenty years earlier:

> My father was a minister and I can remember in the 90s when he was getting used to a computer. He was so excited because there were these new Bible things that you hit a verse and type something in and it would print something off, so he could actually print his verses for his sermons and that was a big excitement instead of having to constantly flip from one side to the other of the Bible. And that was a big deal that I remember.

Others mentioned that their first use of Bible software happened more recently when their children or spouses showed them Bible software and urged them to try it:

> Our kids used BlueLetterBible at school with their Bible study, and it's interesting. They have to click in and it takes you into like the Strong's version and roots and all that. And I would never have had that at that age.
>
> My husband's a techie guy. He's IT, so he would tell me about the new-fan-dangled things that he would find at work and what people were using and I think that was actually in the 90s when we first found out about [Bible software].

One man mentioned that he had previously been aware of Bible software, but it was not until he saw members of his Bible study using their apps to do things more quickly that he felt compelled to try it for himself:

> I was going to the men's Bible study with my old [printed] Bible and I'm, of course, having to hit the Table of Contents to tell me where the page was for the book. All of the other guys [using phones] were already reading it. I was like, okay. I've got to step into the digital age.

At first glance, this man appears to be attracted to using Bible software for its speed and the ease of navigating to a passage more quickly. And yet, a closer look reveals that the impetus for trying a Bible app for the first time was not merely on the merits of the device or abilities of the software, but on something else altogether, namely the social pressure from the group and the desire not to fall behind, either spiritually or technologically. Downloading a Bible app or, as he put it, "stepping into the digital age," functioned not only to help him engage with the Bible, but to keep him within the norms of that men's Bible study. This serves as an example of how the negotiation process of choosing Bible media is never one-dimensional, but tends to involve a complex combination of hardware, software, and social environment.

Software: Replicating, Upgrading, and Enabling New Forms of Bible Engagement

Forms of Engagement by Media

Most of the participants in this study had been using both printed Bibles and Bible apps for many years which meant that the initial novelty of using them had worn off, and they had developed ideas of which media they preferred to use in different situations. Following the question of reading frequency discussed above, the participants were asked to record which media they used for different forms of engagement and in different environments. They were presented with a table that had media along the top and forms of engagement along the side, and they were asked to check any combinations they used. They were not asked to quantify how much time they spent on using any one medium or form of engagement (other than "Long Reading"), only to indicated they used it regularly. Below the results of this survey are

presented in table form and again in a bar chart which makes some of the comparisons clearer.

Table 5. Media Usage for Forms of Engagement

	Print	Phone	Computer	Tablet
Long reading	66.0%	22.0%	6.7%	11.3%
Devotional	48.7%	45.3%	14.0%	14.7%
Study	65.3%	6.0%	18.7%	8.7%
Memorization	49.3%	17.3%	2.7%	6.7%
Meditation	53.3%	16.0%	4.7%	5.3%
Prayer	42.0%	18.7%	4.7%	7.3%
Audio	--	31.3%	9.3%	7.3%
Searching	38.7%	38.7%	34.0%	16.0%
Notes	78.0%	18.0%	4.0%	10.0%
Lectio Divina	8.7%	4.0%	0.0%	0.7%
Totals	49.2%	29.6%	11.2%	10.0%

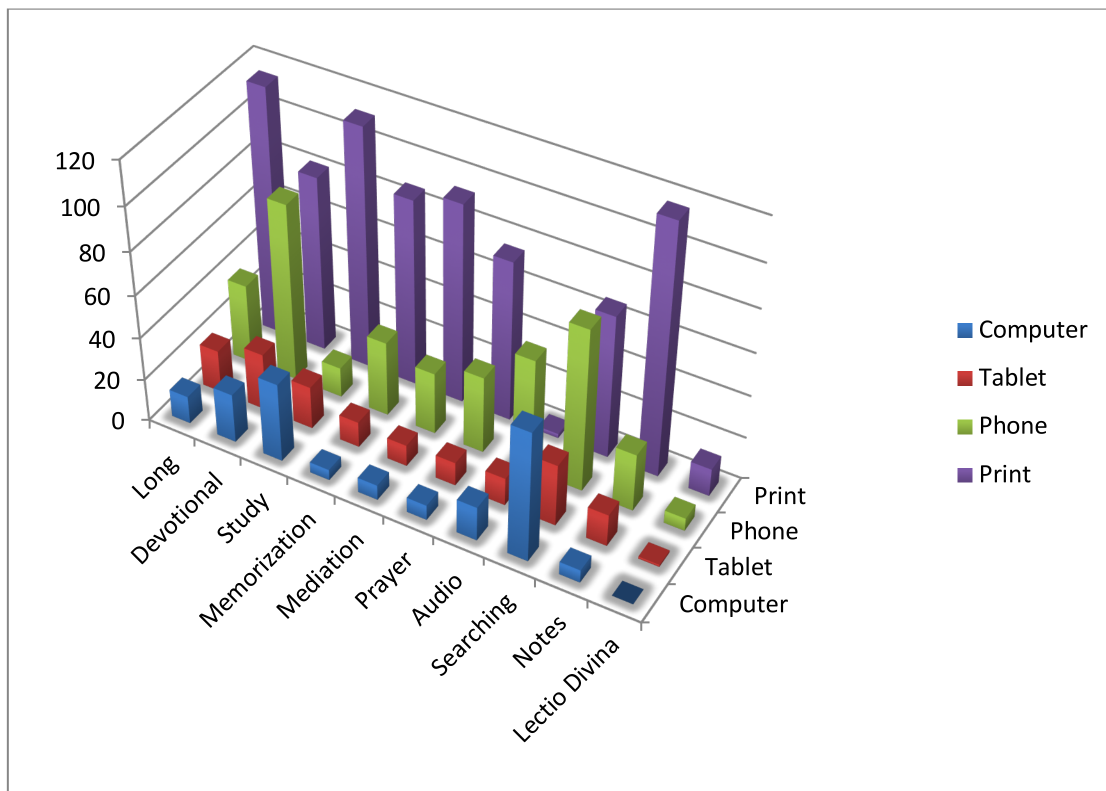

Figure 1. Chart of Forms of Bible Engagement by Media

The summary data in Table 5 show that print accounted for 49.2% of all engagement, smartphones came in second at 29.5%, and computers trailed behind with 11.2%. Although tablets and e-readers match the form factor of a traditional Bible most closely, participants reported using them the least often at only 10.0%. A Pew Research Study on device ownership in the United States released contemporaneously with this study indicated that roughly 73% of U.S. adults own a desktop or laptop computer, 68% of Americans own a smartphone, and 54% reported owning a tablet (Pew Research Center, 2015). This indicates that the participants are choosing to use their smartphones for Bible engagement at a much higher rate than the ownership statistics would suggest. What is not clear in Table 5 is that tablet usage was more idiosyncratic to the individual. The few who reported using tablets tended to report using them for many different forms of engagement, while other participants used a combination of print, smartphones, and computers, but never tablets. In Hutchings's work, participants who reported using a digital Bible did so nearly exclusively (Hutchings,

2015a, p. 437), but here we see only some users gravitating toward a single medium, while others took a multi-media approach. This difference may be partially explained in that Hutchings's survey was distributed online, while the present work was conducted in churches, which may have reached users who are less technologically inclined.

When it came to specific forms of engaging with the Bible, this audience reported that their most common forms of engagement were long-form reading, devotional reading, studying, and searching. Less common were prayer readings, meditative readings, and note taking. The least common activity was *Lectio Divina,* which is not surprising given this audience's evangelical leanings where this practice is less well known (Howard, 2012). The data also indicate that the participants use certain media more often for particular forms of engagement. For example, computer usage is relatively low overall, but it is high for searching and studying. Smartphone usage is lower than print for long-form reading and study, but almost on par with print for devotional reading. Smartphones are also the most popular method of consuming audio Bibles.[10] Print is by far the most popular media for note-taking with higher rates than even reading, while computers, which have the most robust ability to enter text, are the least used for note-taking.

The bar chart in Figure 1 shows that the participants continue to use print (purple) for the majority of forms of Bible engagement. However, the peaks and valleys also makes it easier to see that they tend to use particular technologies for specific tasks. For example, there are phone peaks (green) on devotional and searching, while the computer peaks (blue) are on study and search. This indicates that while evangelicals tend to speak of technology in instrumental terms as being "just a neutral tool," the participants also seem to recognize the values inherent in the technology of desktop computers and phones and make media choices

[10] A few participants wrote in that they used CDs or other media not included in the survey to listen to audio Bibles.

based on these values. We can also observe the ways in which the technology itself and the capabilities of the Bible software overlap. For example, the users report using desktops for searching, but they were not given a chance to indicate whether this was because of a desktop computer's larger screen size or the more powerful search features often present in desktop Bible software like Logos. Similarly, the users report using their phones for devotional reading, and in the discussions below, we will see that this is both because of the properties of the phone (i.e., it always being with them) and features of the application itself (e.g., daily reading reminders).

Participants were also asked about the media they preferred to use in different environments. Their answers to this question presented a shift from how they negotiate Bible media in their private religious practice to how they navigate this process in social environments. Again, tablet usage was relatively low, but highest at home. Interestingly, while print was still the most common form of media at home, smartphones and computers were more common at work or school where a printed Bible might stand out. Also, smartphone usage was stable in all environments with several participants sharing stories of reading the Bible while waiting in a queue, but usage dropped off with children. Even ardent digital users who felt comfortable using devices in worship services and small group Bible studies seemed to prefer print over phones, tablets, or computers when reading with children.

Table 6. Media Usage by Environment

	Print	Phone	Computer	Tablet
Home	60.0%	34.0%	22.0%	18.0%
Work/School	14.0%	42.7%	20.7%	7.3%
Sermon	48.0%	31.3%	1.3%	6.7%
Group	50.7%	36.7%	0.7%	9.3%
Kids	42.7%	12.7%	2.7%	4.0%

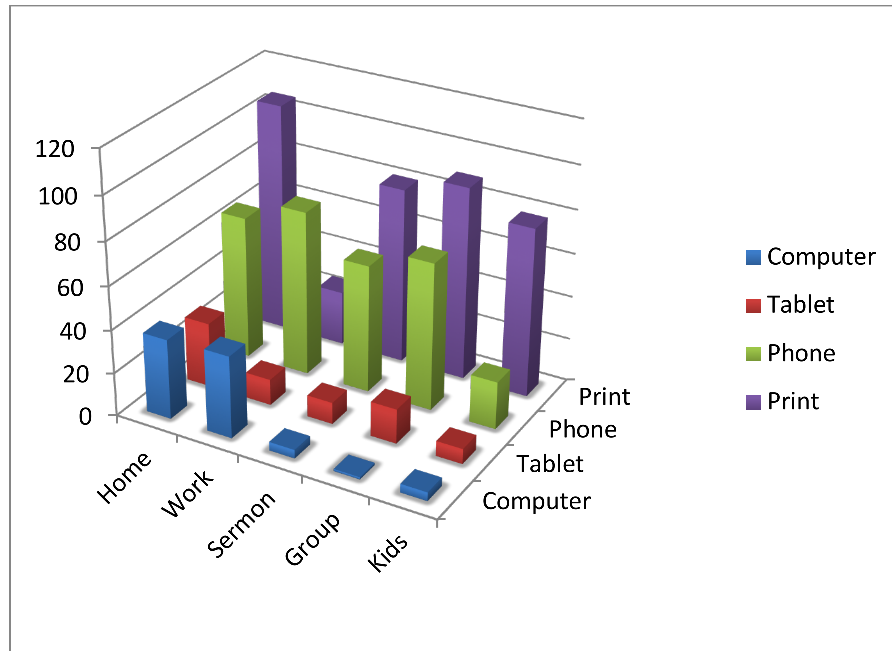

Figure 2. Chart of Bible Engagement by Environment and Media

From these data, we can see that many of the evangelicals in this study have openly embraced technology, and that they have been willing to experiment with Bible apps to see what works for them. In the discussion below, we will add nuance to this aggregate data by exploring how they understood the features and functionality of Bible software.

The features of Bible software can be categorized into three overlapping categories: those that *replicate* engagement done in print, those that *upgrade* or extend something from the print world, and those that *enable* a new form of engagement. For example, simply displaying the text of the Bible on a screen can be understood as largely replicating the functionality of a printed book, but the search functionality of a Bible app is much more powerful than using a printed concordance and upgrades the experience. Similarly, adding a highlight color in a Bible app is very similar to what one does in print, but listening to an audio version of the Bible while one reads, goes for a walk, or commutes to work can be understood as a smartphone app enabling a form of engagement that was not available before. These categories are rather loose, and there is overlap between them, but they can help distinguish the ways the users in this study make choices and form their preferences.

Here we will focus on how the participants responded to three modes of engagement that roughly fall into the taxonomy above: search and study, note taking, and audio listening. In the case of searching and studying, we will see that Bible software extends and augments existing study practices, and as a result, almost all users appreciate the functionality. However, in the case of note taking, which in many cases merely replicates the experience of print, users were more divided with some enjoying new digital functionality and others strongly preferring print. In a third example, the audio Bibles available in most mobile apps, we will see that Bible software seems to be enabling a new form of engagement by tapping into the affordances of the mobile phone. This will lead us to consider the significance of the hardware itself, which the users primarily frame in terms of convenience.

Search and Study: Upgrading Bible Study

As we saw in chapter three, the "Bible Study" is one of the most important activities in the social life of evangelicals, and the data above indicate that many of the participants use their phones and computers for the forms of engagement labeled "study" and "search." Before Bible software, a person needed to use a printed concordance to find all the passages where a particular word appeared, but a computerized search offers a significantly upgraded experience. This includes not only the quantity of data that is returned, but also the experience of being able to immediately view the surrounding passage and related words. In this sense, search and study could be considered both upgrading the experience of print and enabling a new form of engagement. The significance of this can be seen in the way the participants answered questions about their first experience with Bible software. Their attraction to Bible software was not simply seeing the text of a book replicated on screen. Instead, many users recalled the first time they saw the speed and ease of using an application to perform a search that would have taken hours if done manually. One woman reported her first experience with a Bible website:

> The first thing I ever used was Bible Gateway, and I've probably used that for ten years or something. Just to get a search on keywords or to look for verses, or find out how many times a certain word comes up just for different studies.

The speed and comprehensiveness of these searches appear to be one of the primary drivers or catalysts toward taking a first step toward using a digital Bible. Several participants used a form of the word "quick" to describe what first drew them to Bible software, helping them to "accomplish" their goals:

> I was astonished at how much quicker that I could accomplish what I was trying to do because I could search.

> I love being able to grab my phone and go to Bible Gateway and do a keyword or passage lookup very quickly.

This corresponds to one of the major behaviors that the Bible Gateway team identified in its users, what they called a "quick hit." But beyond speed for speed's sake, participants also offered several other reasons why the functionality of search was important to them. Some mentioned wanting to find out "what the Bible says about"[11] a particular word or subject. Others used the search function for locating passages for which they had a vague memory but could not remember the exact wording or exact chapter and verse reference. Bielo observed that members of evangelical Bible studies often cite verses without recalling the chapter or verse (Bielo, 2009a, p. 173), and in this study, a teenager mentioned how Bible apps have made inaccurate or false citations a less frequent occurrence:

> I think it's also harder to get away with, "There's that verse but I don't know where it's found." You can just search for the keyword and so I think it does allow in conversation to be more accurate with just talking about generally a concept from the Bible to an actual scripture reference.

The young man seemed to have adopted an idea common to evangelicals that objective, propositional truths are highly valued, and that being "accurate" is an important component

[11] Malley (2009) works through the various social constructions and meanings of the phrase "what the Bible says about" and its relationship to evangelical biblicism.

of social interactions around the Bible.[12] He went on to describe how his use of a phone-based Bible application was sometimes looked upon negatively by his parents, but when they found themselves in a situation where they needed to use a printed concordance to find a passage, the parents conceded that the digital version was better because it provided faster, more accurate, and more comprehensive results. The importance of finding an exact reference in a social situation or in personal recollections was also mentioned by participants in other groups:

> One thing I do love about the digital is that there's that verse somewhere with those words, and that one about the runner or whatever, you can look it up and you'll find it, where it is and you can find it in context. Whereas if I just have my paper Bible it's like, "Ah, it's in the gospels..."

This participant gives the example of recalling a small part of a passage ("that one about the runner"), but because he did not know the precise reference, a print Bible would only allow him to refer to the general location he remembered ("in the gospels"). Interestingly, however, while the word "run" does appear in several of the gospels, the most commonly referenced passages about running tend to be in Paul's epistles (1 Corinthians 9:24; Galatians 2:2; 5:7; Philippians 2:6) or the one in the letter to the Hebrews (12:1), indicating this participant might have been further away than he thought. Nevertheless, the importance of being able to "find it" or know the location of the passage with some specificity was again emphasized by this user. Some commentators have suggested that searching and viewing the Bible on a phone screen might lead to ignoring the verses before and after (Wiebe, 2015), but this participant seemed to reject these concerns, valuing Bible software for its ability to let him immediately access the "context" of the passage. With a printed concordance, one only sees a small amount of text and needs to take the second, slower step of looking up the

[12] Bielo (2009b, p. 70) also argues that while accurate interpreting scripture is important to evangelical Bible studies, the process of establishing the Bible's "authority, relevance, and textuality" is perhaps more critical for small group interaction.

complete passage, whereas the complete passage is only a click away in a digital version. Thus, we see that, in the case of search functionality, Bible software not only upgrades the speed and accuracy available in print, it also helps users interact with the text in a more contextually rich way.

If search functionality helps users find "what the Bible says" about a particular word or topic, readers also use Bible software to help them understand the meaning of a text as they study it. Bielo found that in pre-digital Bible study settings, participants with study Bibles often "defer immediately to the footnote and accept its interpretation without question," (Bielo, 2008a, p. 62), and Boone (1989, p. 40) credits the innovative use of study notes in the Scofield Reference Bible with popularizing dispensational theology. In the context of digital Bibles, one of the features most often mentioned was having access to commentaries and explanatory resources that provide even more information than the notes in a study Bible. The following participant discussed not only the importance of having interpretive helps, but of referring to multiple commentaries whose authors wrote over a wide period of time.

> I love Blue Letter Bible … I think it has the best integration with lots of options and commentary which is really nice to be able to pull from the modern commentators as well as the Luther's and old school, too.

In addition to outside resources, another theme that emerged in the discussion was that many users appreciated the way Bible software allowed them to dynamically compare multiple translations of the Bible side by side or in searches to help them better understand its meaning. Comparison was not one of the "forms of engagement" listed in the surveys, but several users mentioned using their phones to bring up multiple versions at once or comparing a version on their phone with the one in their printed Bible:

> [With my phone], I look at the different translations, going from one translation to the other.

> If I want to compare ESV to NIV to King James, it's a little hard to do that with a bunch of print Bibles out. Print is what I use for just reading. I do use my phone app with a printed Bible to compare translations.

The first speaker simply states that he used his phone to access different translations of the Bible, and others in the focus groups echoed his appreciation for that upgraded functionality. But the second participant reflected many others who expressed more nuanced and complex practices where they valued different media for different form of engagement ("print is … for reading" "phone app … to compare"). He also mentioned using print and digital in conjunction with one another, using print as the primary source text and the phone for additional study material and translation comparison. The second speaker mentioned that he could do a comparison with printed Bibles, but that it is much easier with a phone app. Here, digital media is in some sense replicating the functionality of having multiple Bible versions or purchasing a parallel edition, but this user found the app so much easier and faster to use that he considered it to be an upgrade. However, rather than using his phone exclusively, his Bible reading and study habits have been changed into a multimedia experience with his phone alongside his printed Bible.

Other participants mentioned similar patterns of using "both" print and digital media for comparison and study:

> But I almost always work with both … we were reading in Genesis and Exodus, but then sometimes they would call you to read a verse in John, and I'd be like, "It's so much work to flip some pages," but I love … being able to go [to] all the different translations that [see] oh, it's something different in digital, side-by-side.

In this exchange, the speaker connects several themes, including speed, comparison, understanding, and moving between print and digital versions of the Bible. Again, the phone is seen to be superior with many upgraded features, but rather than shifting to read exclusively on a screen, many of the participants spoke in terms of using both side by side, taking advantage of what they felt each offered. Toward the end of this chapter, we will continue this discussion of the participants' fluid movement between print and digital usage, but one other major study feature of Bible software is important to mention.

In the quest to understand the meaning of a passage, several participants mentioned using more complex software to study the original language of the Bible.

> My Bible app has got like long press to find of words and will tell you the original meaning and stuff, and I don't care if you have big books if you have that kind of information.
>
> I love BlueLetterBible … I think it also makes really easy to go back and see what the Greek or the Hebrew says, so to really understand on a deeper level what is the actual word.

It was not clear if these individuals had prior training in Biblical languages or if their flavor of evangelicalism led them to value getting to the "original meaning." In the first quotation, the participant hints that having Bible software at one's disposal means that one does not necessarily need to heed the opinions of someone with "big books." This appears to be an example of Campbell's category of "Shifting Authority" in Networked Society (2012, pp. 74-76) because the participant seemed to feel that older forms of authority (i.e., those who carry "big books") are no longer necessary when "you have that kind of information." Instead, these apps are carrying on a tradition set in motion with the printing press of the democratization of knowledge. The second person also appears to believe that software could help him understand the original meaning of a text in a way that a printed English translation could not do. On the one hand, this may mean that apps are helping users understand that English Bibles are translations rather than the "literal" word of God, and yet it may also represent a twist on evangelicalism's anti-intellectualism[13] where the app provides a veneer of knowledge and creates a sense that the right answers are (literally) at their fingertips.

These original language functions are indeed powerful, but another user highlighted the seemingly endless experience of tapping deeper and deeper to answer more questions:

> My favorite one is the Faith Library, it's loaded with stuff on there. You have the passage then you have subtext, which I just love, things that you can buy underneath it. So you read the story and even in Jude it talks about how Michael and the Devil were fighting over Moses and it's like, well what does that mean?

[13] Noll (1994) offered the classic exploration of evangelical anti-intellectualism in his book *The Scandal of the Evangelical Mind*.

> There's a whole book about it underneath … you just click and you keep going deeper and deeper.

This participant uses several different metaphors ("subtext," "underneath" and "going deeper") to describe how the Bible software (Faith Library) brings in outside knowledge to help the reader better understand the Biblical text. As with the prior comments about clicking through to find the true meaning behind the words, these participants imply that the meaning of scripture can be known if only one has the right tools, including access to the "deeper" knowledge of the original languages.

This experience of tapping through to find answers took on another level of significance when another participant shared that he had used digital resources for a time, but then switched back to print because he preferred its "tactile" nature. However, he went on to say that as he read the printed text he found himself "looking for commentary or clarification for certain words out of habit, and it wasn't there." His comments recall the Faithlife leaders who spoke of the poverty of print and its inability to get to help a reader get to "truth." Interestingly, this impulse (or habit) to look for meaning outside the text itself seems to run contrary to the doctrine of the perspicuity of scripture,[14] that idea the Bible can be read plainly and understood. The Westminster Confession explains perspicuity this way:

> ...those things which are necessary to be known, believed, and observed, for salvation, are so clearly propounded and opened in some place of Scripture or other, that not only the learned, but the unlearned, in a due use of the ordinary means, may attain unto a sufficient understanding of them (Westminster Assembly, 1646).

Instead of "ordinary means," the participants above seemed to be arguing for a kind of secondary perspicuity, where the meaning of scripture can always be known, but only if one has access to the right resources with the right answers. They are confident that there is a

[14] The concept of the perspicuity of scripture dates back to the Reformers who contrasted it with the need for official church interpretation (Mattox, 2006, p. 104). Evangelicals like Vanhoozer (2005, p. 206) continue to argue for a form of perspicuity, but scholars like Stackhouse argue that it is often practiced in "in ways that are sometimes perplexing and even self-defeating" (Stackhouse, 2004, p. 188).

correct answer ("What does that mean? There's a whole book about it") but it may be in one of the "things you can buy." This is similar to Boone's argument that the Reference Scofield Bible provided a key that allowed evangelicals to "decode" its meaning. After experiencing the search capabilities of Bible software, most participants said they did not want to go back to a printed concordance, and here, it seemed that after experiencing the rich resources of the digital study environment, many users did not want to go back to only having access to the text alone. This appears to be a case in which Bible software not only add a new pattern of Bible engagement to the participants' lives but partaking in that pattern also changes later encounters with the printed text and one's relationship to the Bible itself. Likewise, while the study notes and reference material can be seen as a form of evangelical empowerment by providing access to resources that allow readers to study the text apart from an external authority, these apps could also be viewed as transferring authority to themselves, reinforcing the idea that the meaning scripture is knowable, but only if one has purchased the right the resources.

However, while many of the participants appreciated the speed of digital searches and access to commentaries, others expressed concerns about these new tools. The following participant acknowledged how "technology" was clearly better in some cases, particularly for searching, but similar to Weaver (2017b), he also expressed a worry that over time, using phones and computers might lead to the neglect of printed Bibles, and specifically the role a printed Bible plays as a social signifier of a true Christian. As the participant said the following words, he held up his well-worn printed Bible, and each time he said the word *this*, he gestured with it for emphasis:

> The technology sort of blends the Bible with all these other things. And so, when I hold *this*, people see it and they say immediately, "Oh, they must be a Bible-believing person. That person's different. And so I feel like sometimes we're losing this uniqueness that *this* represents when you hold it and when you carry it. And so technology to me is good for quick referencing and what you need in conversations when you don't have *this*, but we're losing the idea that we need to

> carry *this*. We can reference [the Bible] from a phone, [but] everybody else that sees that phone doesn't know … So I think *this* is still unique right here.

The man praises the digital Bible for use in certain forms of engagement ("good for quick searching") and for its convenience ("when you don't have [a printed Bible]"), but also laments its uselessness relative to a printed Bible as a visible identity marker ("a Bible-believing person") and as an object with cultural and communicative power ("what this represents when you hold it and when you carry it"). Below, we will explore additional worries about Bible apps, but here it is important to note that even a person expressing the evangelistic importance of a printed Bible still conceded how helpful Bible software was for searching and studying. In the next case of note taking, we find a form of Bible engagement where there was less consensus around the benefits of digital media.

Note Taking and Highlighting: Replicating a Practice

Unlike long form reading where a large majority of participants preferred print to screens, and unlike search where most viewed Bible software as a significant upgrade to printed concordances, in the case of note taking and highlighting, opinions were split on which they preferred. The note taking and highlighting features in Bible apps largely replicate the same functionality in a printed Bible, but researchers have suggested that note-viewing (Torma & Teusner, 2011) and note-taking features (O'Neill, 2010) are still not as robust in Bible software as what is available on the printed page. The users in this study expressed a range of opinions about print and digital note-taking, and their reasons for choosing one over the other included considerations such as ease of use, immediacy of access, and relational connectedness. For example, in terms of functionality, several users mentioned wanting their notes to be immediately visible, convenient, and accessible. The following user mentioned trying the notes feature in her digital environment, but then later realizing that she never looked at them again because the notes were not visible by default. She then contrasts this

with her experience of notes or highlights added to her printed Bible which were always visible and often prompted new thoughts:

> I prefer my own personal annotations, like I use the highlights or whatever but then in the digital version, I don't look at them. Like I don't go back and actually open up the notes because they're not right there, [but] when I'm looking at my own notes or annotations [in a printed Bible], it's right there.

Other participants expressed similar dissatisfaction with the functionality of digital notes, but many also couched their preference for print not in terms of superior functionality, but more in terms of print's perceived meaning and capacity for relational connection. For example, the following participants both drew a contrast between search functionality, which they saw as clearly more powerful in a digital environment, and the sense of meaning derived from the experience of seeing one's handwritten notes and previous highlights:

> Yeah, I certainly recognize the utility of the search function of the digital, but I want to go back into my Bible and see what I've already underlined and go back to that and all. Old dates and maybe even when I shared a verse with someone else, or kind of what was going on at that time.

> I've been in technology all of my adult life. So, I'm very comfortable with it, but with my Bible, I love writing in it, notes, sticky notes, tuck-in cards, that kind of thing. I would have to say this is more meaningful to me, but I love being able to grab my phone and go to BibleGateway and do a keyword or passage lookup very quickly.

Both seemed to view the search functionality of a phone as something that augments the deeper, more meaningful experience of print for taking notes, highlighting passages, and sharing those experience with others. They seem to be contrasting the "utility" Bible software with the "meaning" of print, choosing to use both in tandem rather than completely converting to a screen-based Bible. Similarly, other participants framed their preference for print-based note taking in terms of the printed Bible's place as an identity marker, which we observed in the discussion above about search and study functionality. The following participant considered print-based note taking and sharing to be a "witness to others" and felt that it was such a central part of her faith that moving to digital notes would not be an option:

> My Bible is full of notes because this is my source of acquiring knowledge. God tells us to seek knowledge and acquire wisdom. So I become enlightened by someone else, perhaps, as we're studying a particular scripture and I have my note there, that refreshes my memory that I might not have remembered had I not been able to write it down … This is my witness. That Bible is my witness to others. And I carry a Bible.

As she spoke, she held her printed Bible tenderly and reverently, emphasizing it whenever she referred to a note or said the word "Bible." For her, the Bible was less a conceptual category and more of a sacred object with meaning that went beyond the words inside. The immediacy of the notes and their permanent spatial proximity to the text made them come alive and function like a hand-written Ebenezer that reminded her of God's work in her life. A digital Bible, with its notes and highlights stored in the cloud, always accessible, but never tangible, could never leave such a lasting impression. This indicates that for many evangelicals, the Bible as a material object may continue to have enduring significance, especially if they use a phone alongside it.

And yet, while the participants above spoke of print note taking as an important spiritual discipline they were unlikely to change, another group of participants, several of whom were younger, offered similar stories about their experiences with digital notes. The following user reported looking through all the digital notes he had made during the previous year and using it as a kind of spiritual diary:

> What I did earlier this year—I was looking back at the ones that I had highlighted, and it was really interesting seeing the date that I'd highlighted it and why I highlighted it. I went back in my head, "Oh, I was going through this." That was really interesting to see the progression of the highlighted notes, which you can't do in a book.

This use of digital notes as a spiritual record is similar to what previous participants mentioned doing with their printed Bibles. Interestingly, both groups of participants seemed to feel that what they were doing would not have been possible in the other medium. This may indicate that when a person has a highly meaningful experience with a particular form of engagement, they may be less likely to try that same form of engagement in a different

medium, whether print or digital. This seems to correspond with Noll's idea of "culturally adaptive biblical experientialism" (Noll, 2001, p. 2) where evangelicals seek Bible-based experiences. They are willing to adapt to new cultural goods like phones and apps, but Bible experiences powerfully tie them to those media. In my interview with the YouVersion leader, he mentioned that they had considered building a feature that would create a print-on-demand Bible that would include the user's personal notes entered into YouVersion in the footer of the page, much like a published study Bible. This combination of print and digital might allow for a new form of the experiences that these participants were seeking to replicate, but so far this feature has not emerged.

In addition to the way digital notes can be used as a time-based spiritual diary, others preferred digital notes because they could access their comments in multiple places and environments. The following participant, who served as a Bible study leader at City Bible Church, was pleased to find that notes she added using a smartphone could later be accessed using a desktop computer when preparing lessons for teaching:

> The phone has been really useful to me because throughout a week of preparation for a teaching topic, I may be listening to my devotional and I hear something, or I read something that I know will be useful for my lesson that week … I'm going to highlight it [or] make a note about it … I know I will be able to come back to it when I am actually compiling my lesson … Whereas if I hand wrote that in the Bible I actually might not remember where they are.

Her words demonstrate that although the participants were split on their preference for print or digital for note taking and highlighting, both groups expressed the same basic criteria for their decision—how easy it was to go back and find the notes or highlights they had made. Some moved to digital notes for fear of losing a print Bible, while others avoided digital for fear of losing all the electronically entered notes in a version upgrade or software change. It is also important to observe that in the quote above, the Bible study leader mentions "listening to my devotional" while taking notes on a phone. This highlights two significant trends. First, as we will discuss below, many participants spoke about how phones

had enabled them to transition not merely from text on a page to text on a screen, but from reading the Bible to listening to it. Second, this activity of listening while taking notes on a device indicates a multi-media and multi-sensory experience that goes beyond the print vs. screen dichotomy to a new forms of interaction with the Bible.

While I have cast note-taking and highlighting primarily in terms of replicating the functionality of print, there is another aspect of note-taking that upgrades or even enables a new form of engagement. In the previous chapter, we noted that from its origin, YouVersion's leaders felt strongly about the importance of adding social features to their website and apps because they instinctively felt it would boost Bible engagement. They have done this with their note-taking and highlighting functionality, allowing users to quickly share verses and imagery with friends in the app or on social media platforms. Several participants discussed how these social features had influenced their use of highlighting and note-taking features, including the following user who was initially skeptical of YouVersion's social features, but after trying them found that highlighting within a social app was a positive experience:

> I thought it was cheesy at first, the whole friends thing [in] YouVersion. I didn't think that was really going to catch on, for one. But, I started doing highlights and I would share them to different people. And the one person that picked up on it was my mom, who I don't talk to a lot about the Bible stuff. We actually have conversations through the app. She's not tech savvy at all [laughter]. But we actually have conversations about Bible verses now, through the app.

This participant's comments seem to indicate that the social significance of a printed Bible has, for some users, found a new form in the digital world. Phillips argues that in digital culture, there is a "social performance of bible engagement" that appears whenever "people highlight, bookmark or share a bible verse within social media." He argues that these actions reveal "something about their own identity and also something about their own perceived audience" (Phillips, 2019, p. Introduction). In this case, however, the audience (his mother) seems to have been largely unintentional. The social performance on public

platforms like Twitter and Instagram may differ, then, from what occurs within closed, religious communities like YouVersion. In this case, we can see Hopeful Entrepreneurial Pragmatism influencing the social dimension of religion, where the participant embraced a feature he doubted ("I didn't think that was really going to catch on"), experimenting with it ("share them with different people") to see if it would work ("we actually have conversations").

Again, participants seemed to see the upgraded functionality of digital search in largely positive terms, but they were more divided on note-taking and highlighting. Because note-taking largely replicates an action one can do in print, the participants seemed to tie their evaluations of the media not merely to functionality, but to their lived Bible experiences. For some, these experiences happened at the individual level such as those who discovered of a spiritual diary in their notes, and for others, their note taking and sharing was tied to the social dimension of their faith. In the next section, we will see a feature that cannot function in print media, enabling an entirely new form of engagement.

Audio Bibles: Enabling A New Form of Engagement

For this study, the primary emphasis was on textual consumption (i.e., "reading") of scripture either on the printed page or on a screen, but the subtheme of increased audio listening also appeared in several focus groups. In the forms of engagement survey, participants were asked if they used phones, tablets, or computers to consume audio. A few people wrote in the margins of the survey that they had previously used other media like compact discs (CDs) to listen to the Bible, but many more used their phones to listen. Audio Bibles have long been available to purchase, but the convenience of the smartphone paired with free audio versions appears to be enabling a new form of engagement that was previously too costly or inconvenient for most participants. During the focus groups, I had not planned to ask about audio Bibles, but several users brought it up unprompted when I

asked about the most significant way that digital media has changed their religious habits. One older participant immediately answered, "I think the audio apps," and others offered similar praise for listening:

> I love the audio versions. I listen to them all the time [using my phone].
>
> I'd say probably 20 or 30% of my Bible reading this year has been audio.

Their discussion of audio Bibles surfaced several interesting trends in Bible engagement, including additional support for the idea that Bible experiences are becoming multi-media encounters with a mixture of print text, digital augmentation, and audio overlay. Several users also mentioned creating what we might call an ambient Bible experience where they listen to the Bible in the background while they go about some other task, including household chores, commuting to work, or going to sleep. Some participants also reflected on listening as an important religious act:

> At night, and I'll just have the audio on. And I just want to get back to sleep and it calms me… It's kind of interesting, the passage says, "Faith comes by hearing," not by reading the Word of God.

The passage the participant mentioned is Paul's discussion in Romans chapter 10 of the importance of the proclamation and hearing of the gospel message (Romans 10:17). This participant went on to mention the ministry which took Paul's words as its name (Faith Comes by Hearing) and began producing audio Bibles, first on audio cassettes, later on MP3 players, and today in Bibles apps. Others participants mentioned that before the era of phone apps they had wanted to listen to audio Bibles, but they had not done so because of the barriers to entry including cost and lack of portability. This changed with the advent of the smartphone, which opened up the possibility of listening to scripture in new situations:

> I'll hit audio on my drive to work because at that point I'm not going to be looking at it anyway. I'm taking in scripture but through a different media on my drive to work.

In this example, Bible software is not so much extending or modifying a form of engagement that the participants were already doing, but instead, it is enabling a new form of

engagement that they had not been able to experience before. However, the availability of this new form can be attributed as much to the software as to the portability and presence of the phone. The phone is at once enabling the new form of Bible engagement and allowing that form fill a space where the Bible was formerly not available.

Others mentioned having audio Bibles on in the background as an alternative to music or news radio, and another group listened to Bible recordings as a way of going to sleep. The following participant, who said that the availability of audio was the most important change Bible apps had brought into her life, described how she used it to create an ambient Bible experience where she was always absorbed in scripture even if not consciously:

> I can go about my daily routine and I'm hearing the word, and I may be cognitively focused on something else, but the Word is always back there in my mind.

Several other individuals confirmed that they, too, enjoyed this kind of ambient Bible experience for the way it shaped their attitude in ways they considered more positive than news or other content. Others, however, reflected that this practice did not result in them remembering as much as they had hoped, but they persisted because it was still better than not listening at all:

> I listen to an audio Bible every day when I'm either working out or walking my dogs. I'm not sure if I'm retaining as much as if I was sitting down and using quiet time, but a busy life, you know?

In this user's words, we can begin to observe a pattern latent in many of the focus groups of a pragmatic approach to Bible media choices in which any Bible engagement is better than none. This participant values a separate, distinct time of reading scripture (a "quiet time" in evangelical parlance) presumably in print, but he laments that the pace of his life is too frenetic and hurried for this. His solution was to multitask, to layer audio Bible listening on top of an existing activity, in his case, dog walking. Phillips connects the idea of phatic communication, "the background noise to our lives, the social radio playing in the corner, the

sense that others are present with us" (Phillips, 2019, p. Chapter 2), from the study of linguistics to sharing Bible verses on social media. Listening to the Bible in the background in the manner the participants describe may represent another form of phatic Bible engagement. However, it is unclear what the effect of this practice might be or how effective it is at helping listeners do what they say they value, in this case, to "retain." Several studies support his worry, including those indicating that multitasking may either be ineffective (Ophira, Nass, & Wagner, 2009; Uncapher & Wagner, 2018) or that it might actively lower IQ and learning (Ellis, Daniels, & Jauregui, 2010; Flanigan & Peteranetz, 2019; Levitin, 2015, p. 97). However, some studies also suggest that multitasking does not harm productivity when the two activities do not physically conflict with one another (Schumacher et al., 2001). Further study would be needed to determine the full impact of ambient Bible experiences, but here we can observe that mobile Bible apps are enabling a new form of engagement and that many users have incorporated this new practice into their lives.

As with other forms of engagement, the social dimension also surfaced in discussions of audio functions. Some participants spoke of listening to scripture in groups as they read along in their printed versions, and that they valued the practice because listening "changes the way you hear it" from the experience of reading the text to oneself. But perhaps the most significant social interactions centered around audio Bibles came from parents discussing interactive audio Bible apps designed for children. In late 2013, YouVersion launched the "Bible App for Kids" which contains abridged Bible stories where the text is read aloud to the users.[15] Parents in several focus groups praised the app for allowing young children who had not yet learned to read to have the experience of "reading" the Bible. Some even wondered aloud if these younger children had listened to more of the Bible than their older

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[15] YouVersion. (2013). The Bible App for Kids Is Here! Retrieved from https://blog.youversion.com/2013/11/the-bible-app-for-kids-is-here/.

children whose only access to the Bible was when the parents read to them, rather than having an app that could read anytime.

> I love the YouVersion Kids Bible, and I'm thinking as I'm sitting here that my four-year-old probably reads and knows or really listens to more scripture than my 12 and 13-year-olds did at that age because … they were dependent on me reading it to them. To me, that's a beautiful way of utilizing the technology.
>
> We have the Bible app for kids, and that's been really helpful because, despite our best efforts to read to them daily from the Bible, it's really hard—especially for kids that don't read. But the Bible app for kids—we hand them our old iPhone 3s … and they love it. They just have it read to them, and they think they've got this special treat because they've got the Bible app. So that's been really helpful because then we know that they're their daily reading in too.

Both of these parents emphasized the importance of daily Bible reading ("our best efforts to read to them daily") in their family and that "more scripture" is always better no matter the medium or the person/app doing the reading. However, recall that in the survey data above, parents who used their phones at high rates for their personal reading reported that when they read to their children, they preferred to use a printed Bible. This is perhaps because they felt the printed Bible was a better means of passing on their spiritual heritage. And yet, as much as they value the parent-child connection built through reading a printed Bible together, they value the amount of reading even more, and HEP frees them to let an app read to their children. These behaviors also remind us that children today are growing up with personalized, multi-media Bible experiences that include text, images, audio, and even interactive elements. Thus, these parents are passing their values (95% said daily Bible reading is ideal), but Bible software is creating a different environment than the one the parents would have experienced in their early faith formation.

Hardware: The Convenience of Mobile Devices

In the discussions above, we have been examining how Bible software replicates, upgrades, and enables new forms of Bible engagement and how evangelicals understand and appropriate these into their lives. We have seen that the participants chose between different

forms of media based on their understanding of how each medium will help them accomplish their goals for engaging the Bible. In many cases, users compared and contrasted the strengths and weaknesses of printed Bibles versus Bible software applications. But while the software clearly made a difference in many of these cases, such as the much more comprehensive and interactive search results of an app compared to a concordance, many users also seemed to indicate that they used Bible apps less for any specific feature of the software than for the convenience of always having a phone in their pocket. This meant that sometimes, the participants would stop and reflect on the media available to them, evaluating and using what they consider to be the best tool for the job. But in many other situations, they are less reflective, using not what they consider to be "best" but taking a more serendipitous approach and using what is most readily available.

The following participants serve as examples of the more thoughtful approach, noting how they chose between print and digital or between different Bible apps based on the specific activities in which they are interested.

> I tend to use my phone more for daily devotionals than my printed Bible, but I use my print version for everything else.
>
> I use the computer … if I want to do commentary or searching more in depth. But the phone for the actual bible study.

In both cases, the users are reporting that they have consciously thought through which medium they found most helpful for the forms of engagement they found most meaningful. Others mentioned that their media decisions were driven not only by the activity they wanted to perform, but the location in which they wanted to interact with the Bible. The following participant linked the importance of hardware and software together, praising the app for keeping her place in a reading plan and the phone for being accessible when she was away from home:

> I use my [printed] bible for home study, but if you're out I always use the tablet or the phone. You have to remember where you [last read when you] walk through the Bible for a year.

Other participants offered their own taxonomies of usage based on various situations and needs they had encountered. As they talked through these scenarios, a theme emerged that even though they actually preferred print *as a medium*, they still found themselves using digital media purely out of convenience and availability. One man put it this way:

> I use [my phone] more for convenience, but I love the printed page. But I don't spend time with it. It's my iPhone I use.

Here, the man admits that even though he prefers print, he no longer uses it because it feels to him far less convenient than his iPhone. The pragmatic power of convenience in determining his choice can be seen in the emotional contrast of speaking of print as something worthy of "love" and yet reluctantly acknowledging that he doesn't "spend time with it." Similarly, another man confessed that it was not until the present study that he had actively considered which device he would use in which situation.

> I had to process and think about just when and where I'd really chosen to use one thing over another, [I just tend to use] whichever [is available].

This suggests that while some users choose a medium based on its functionality, for many others, their favorite Bible translation might be called the Nearest Available Bible (NAB). That is, their primary decision-making criterion is less theological or ideological, and simply a function of what is closest and most accessible in a given situation. These comments indicating a preference for the Nearest Available Bible correspond with the survey data on the devices participants tended to use in certain contexts. For example, participants reported that their highest usage of desktop computers was during work hours. They likely used their desktop computer because it is less conspicuous than a printed Bible and was less likely to draw attention from coworkers. But the choice may also have been driven by their desktop computer functioning as the Nearest Available Bible. Similarly, users reported the highest

rates of smartphone Bible usage when they were in places other than home or work, indicating again that they preferred print, but used their phones because of its affordance. The importance of portability was also raised by participants who reported that they were initially uninterested in the concept of a digital Bibles because their first encounter was on a desktop computer. When focus groups were asked to recall the first time they encountered an electronic Bible application, one man recalled being shown the BibleGateway.com website on a desktop computer and, while he found it intriguing, he was less interested because it was not portable. Later, when he purchased a smartphone, the prospect of reading the Bible on a screen became more desirable. These comments suggest that when people are choosing between print and digital Bibles, they do so in part based on the medium's inherent qualities, and one of the most important of these qualities is the smartphone's convenience and proximity, or its accessibility in a given context. In fact, of all the questions asked in the focus groups, the participants offered the most consistent responses to the question of why they preferred Bibles apps to printed apps, with many people using the words "convenience," "ease", or "accessible" in their responses. This corresponds with the findings of Hutchings (2015a) and Richardson and Pardun (2015) each of whom collected responses from participants emphasizing the convenient access to the Bible afforded by their mobile device.

Some went on to describe the way this convenience allowed them to fill their "downtime" with Bible reading and even increase the amount they were able to read on a daily or weekly basis. Rather than simply transferring the existing habits and disciplines from print to screen, many indicated that it was the combination of hardware and software that helped them increase their Bible engagement, sometimes rather significantly:

> I have the opportunity to read more often or do my devotional while waiting in line somewhere. I don't have to wait to get home to use my Bible.
>
> For me, [Bible reading] was sporadic until I went to an electronic copy, which is where all the rest of my work is being done. Then it became daily.

> I will say that because it's on my phone, I refer to it a lot more often than I did before.

We have seen that for the evangelical readers studied here, "daily" reading is an important part of their religious life, so if a phone-based Bible led to accomplishing that goal, then it will certainly be seen as a moral good. Even more important was another user's statement that the Bible app was not merely a means to an end, but helped establish a pattern or "routine" in life, integrating technology and faith together. The following participant drew on elements of Hopeful Entrepreneurial Pragmatism to make a case that the Nearest Available Bible is the best Bible:

> I grew up … always carrying my paper Bible to church, and I have a couple that I really like. But my whole thing, for me is that the Bible that you read is better than the Bible you don't regardless of what form it comes in. I'm just not carrying my paper Bible with me everywhere, every single day, at all times. I always have my phone—always—with almost no exceptions.

The ever-presence of the smartphone ("I always have my phone") combined with the pragmatic logic ("The Bible that you read is better than the Bible you don't") make the smartphone an attractive option, and perhaps even an inevitable one. Another implication of his argument is that not reading a Bible is far worse than reading in an inferior format, which is a natural outworking of evangelicalism's high regard for the Bible paired with a hopeful and pragmatic view of technology. However, this participant also went on to say that the convenience of a smartphone Bible is a double-edged sword, because the other applications on a phone have the potential to distract and compete for attention, both when one is using a digital Bible app as well as during the downtimes that many people fill with smartphone usage:

> When you have that five seconds of downtime you're pulling out your phone to get distracted by something and usually it's Facebook or Twitter. And so to try to more often open up the Bible app and make some more progress in whatever the day's reading was, that's been a huge help

This reference to using a smartphone during "downtime" follows reports on smartphone habits indicating that many people use their smartphones in times of boredom such as in a queue at a grocery store, during commercial breaks on television, in the restroom, or on public transportation (Richtel, 2010). Siker argues that when Bible apps exist alongside these other activities, it contributes to the "the de-sacralization of the Bible on digital devices." But he also argues that this presents opportunities for "a new vernacular of Christian faith for reading, hearing and watching the Bible" (Siker, 2017, p. 185). Many of the participants in this study reported attempting to navigate this new reality by avoiding "Facebook or Twitter" in such idle moments and, instead, using their downtime for Bible reading. The focus groups were also asked if they treated Bible apps on their phone differently than other apps, such as hiding them or prioritizing them as this participant mentioned. One person mentioned replacing a specific app (Facebook) with a Bible app:

> Yeah, I deleted Facebook and I put the Bible out right where Facebook used to be. And so my friends are, "Oh, I better read the Bible [laughter]."

Interestingly, this comment surfaces the purposes users assign to their devices. The smartphone has its origins in land-line phones and, at first, their only function was to enable social interaction through human speech. But as cell phones became smartphones, they added more features and become more of a mobile computer terminal. Today, smartphones are used more often for texting, video-watching, and internet browsing than phone calls (Ericsson, 2018). The user above seems to want to demote electronically-media social interaction via Facebook in favor of a Bible app, but then does so within a larger social matrix where friends see one another's phones and their choices then influence the rest of the group. The presence and arrangement of one's apps, including Bible apps, might then be functioning as a kind of conspicuous consumption that combines software, hardware, and social expectations. It may also represent part of Siker's "new vernacular" where evangelical readers appear to view and

treat their Bible apps differently than other apps. At the same time, deleting an unused Bible apps is not likely to have the same social impact as destroying an unused printed Bible.

Some participants also reminded the group that the importance of convenience and availability for regular Bible engagement was not exclusive to the smartphone. One man mentioned that during his time in the United States military, he found himself reading scripture more often than in his civilian life. He said that his deployment was one of his "lowest points," so I asked him if these low points were what drove him to read scripture more. He agreed to that, but also cited the fact that he carried a small printed pocket Bible with him and that its presence and availability during down times led him to read it more:

> Yeah, what kind of kept it on me was [a little Bible] in my pockets through the mission—things like that. So I would keep it on me all the time. And obviously, when I had some downtime, I'd go out and read it.

Here, again, the concept of "downtime," when paired with availability, was an important factor in Bible reading regardless of media. Though a military deployment is quite different than a long queue at Starbucks, the way he spoke of having a printed Bible with him "all the time" echoed how many participants spoke of their phones ("I always have it, no exceptions"). Users also mentioned that convenience and accessibility were important not only for daily or devotional reading, but also for study, search, and other forms of engagement as they become more comfortable with them. One participant added an important nuance to the discussion of attention and convenience noting that she read the Bible more when some form of it was visible or in her line of sight regularly. She mentioned experimenting with placing a printed Bible where she could see it and then transferring this idea to her phone by putting a Bible app in a prominent place on the home screen:

> I would say a lot of times it's out of sight out of mind. So the print version of our Bible we try to keep it out on the table sometimes, but sometimes it makes its way to a bookshelf… And then I have a Bible app to try to counteract the out of sight out of mind thing. I try to move it to my front page … if I see the Bible it's like, "Maybe I should pick it up and read it."

This participant's comments remind us that the choices users are making between print and digital media involve both hardware and software and that they take place within a complex social environment with many sources vying for their attention.

The Fluid Usage of Print and Digital

In this chapter, we created a portrait of evangelical Bible readers, drawing on quantitative and qualitative data in order to see how Bible software is influencing the way they engage the Bible. We have seen that the users in this study read the Bible quite frequently, are open to experimenting with technology, and use a assortment of forms of engagement as part of their spiritual practices. They are comfortable using a several different media to accomplish their goals, and the negotiation process they use in choosing a medium is driven by three major factors: the software, which augments existing practices and provides new functionality, the hardware, which makes it conveniently available in new situations, and the social environment, which shapes the norms of a given situation.

When given the choice, many participants said that they prefer to use a combination of print and digital forms, sometimes simultaneously, and that they move fluidly between them. The following individuals said that their use of media has evolved over time as they have learned to adapt to what each medium offers:

> This may be generational completely, but … I use both. I use a computer every week to learn the Bible. It seems to me the print version seems more permanent. It seems more significant. Maybe that's just because that's what I was raised with. … If I read a passage on the phone or on my computer—I'll go to the print version just to check.
>
> I use them at the same time. And I think that one on its own generally leaves you feeling just a little bit handicapped, compared to what you can do with both together.

These verbal comments match the data in Table 5 as well as written comments where participants reported using multiple forms of media to access the Bible. This fluid movement between print and digital media also follows research into the online and offline religious

habits of people of various faiths (Campbell, 2012). Rather than seeing a strict delineation between online and offline, users move fluidly between both environments throughout their daily lives. Similarly, in her book length treatment on digital reading, Naomi Baron (2015) suggests that while screen reading tends to be linked with distractions, the future of print and screen reading may come down to a complex series of user preferences for specific forms of reading. Her conclusion appears to be in line with the argument here that participants consider the software, hardware, and social context when making decisions about whether to use print or digital Bibles. Some, like the participant in first quote above, leaned in the direction of print because of the feeling of spiritual connection that that medium gave them. They referred to the printed Bible as “more permanent” and “more significant” while also recognizing that might in part be due to familiarity and upbringing. This displays a kind of self-awareness that one’s media choices will never be entirely objective, but deeply woven into one’s history and the cultures in which one has been embedded. And yet, while they prefer print, they also include digital media as part of their Bible engagement even if “just to check.” Others, however, expressed that they had read much more of the Bible more often since the advent of mobile Bible apps, and that after experiencing the powerful features of the app, they felt as though print alone would leave them “handicapped,” which again points to a reconfiguration of the Protestant doctrine of the perspicuity of scripture. Instead of “just the Bible,” the following comment expressed the best-case scenario of many participants:

> I prefer to have a trusted printed version that I can read … and then some sort of digital reference that I can use as a complement to that.

I asked a group of five teenagers in one of the focus groups if they ever thought about the world before smartphones, and they answered with a simple, “No.” But when I asked if they exclusively used their phone-based Bibles, one teen shrugged and offered, “Not only.” The attitude of this teenager seemed to indicate that choosing between print and digital Bibles was simply something Christians just do, and this everyday decision was not particularly

noteworthy. This reflects research into the way teenagers make media choices (Gardner & Davis, 2013; Rainie & Wellman, 2012), but it also reflects the position of some of the adult participants who admitted that they had not given it much thought until the present study. In the following chapter, we will consider in more detail how digital media might be affecting the forms of Bible engagement they value most.

CHAPTER 7:

THE INFLUENCE OF DIGITAL ON EVANGELICAL READER BEHAVIOR

The previous chapter painted an initial portrait of how evangelicals make decisions about whether to use print or digital Bibles, noting that they have a complex decision-making heuristic that takes into account the Bible software, the phone hardware, and their social environment. We saw that Bible software augmented existing practices and afforded new ways of interacting with the Bible, but we also noted that the convenience of portable devices drove their decision to use their phone even when they personally felt that a printed Bible might offer a better or more meaningful engagement experience. These conclusions were largely based on self-reported survey data and focus group conversations, and in this chapter, we will incorporate instruments designed to measure how closely aligned their impressions are with their actual activity. We will investigate two specific forms of Bible engagement which evangelicals deeply value—reading for comprehension and maintaining a daily reading habit—drawing on qualitative and quantitative data to understand how Bible software, and more specifically the evangelicals making it, are influencing the way readers encounter scripture.

We will find that, in the case of reading comprehension, screens may indeed be impeding their ability to understand their sacred text. Though comprehension is certainly not the only thing evangelical readers value when engaging scripture, it can serve as a vector for something we have previously seen is a key component of evangelical culture—the Bible study. If comprehension serves as a case where the digital Bible may be working against evangelical values, the data also indicate that Bible software increases daily reading patterns and completion rates for reading plans, which are also important in evangelical culture. The data also suggest that these effects, both positive and negative, have an unexpected gender-

based difference. Before analyzing the data, we will first review the literature on screen-based reading.

The State of Reading on Screen

Much of the relevant literature on print and digital Bible reading has already been presented, such as Kang's (2012) analysis of Bible software which suggested the smartphone is best suited for more regular but shorter reading, Richardson and Pardun's (2015) work showing that users value convenience of portable devices but also worried about their potential for distraction, and Hutchings' (2015a) data indicating that even readers who are heavy technology users vary in the feelings about digital Bible readings. To put these into context, we will also examine the work of researchers outside the field of digital religion who have studied the differences between screen reading and print reading more broadly. In her book, *Proust and the Squid* (2007), Maryanne Wolf argued that the human brain was not "born to read," but that it is a learned behavior and one that is changing as we incorporate screen reading into our habits.[1] In her follow-up more than a decade later, she found that even though she a reading expert, her ability to perform "deep reading" has been diminished by her use of screens (Wolf & Stoodley, 2018, p. 35ff). Before such books, early studies comparing print and screen reading highlighted the significant physical differences between paper and the large CRT monitors of the era, but as screen technology evolved to eliminate much of the physical disparities, it has become increasingly clear that a simple dichotomy between "print" and "screen" does not fully account for how the two media influence behavior and usage.

In his definitive 1992 survey of research on large CRT screens, Dillon showed that studies leading up to that point tended to focus on issues such as fatigue while reading,

[1] Dehaene (2009) makes a similar argument, drawing on neuroscience suggesting that the human brain did not evolve for the task of reading, though he does not offer deep consideration of the influence of screens.

scrolling accuracy, slower reading on screens, and resultant comprehension difficulties (Dillon, 1992). In the transition from CRT monitors to flat screen LCDs, users experienced less discomfort with the screen itself, and some researchers found no difference in comprehension between print and screen (Cushman, 1986). However, other researchers continued to find that, for both consuming and producing content, users performed better with print than with screens (Wästlund, Reinikka, Norlander, & Archer, 2005). They concluded that this difference was likely due to higher levels of stress and tiredness with screens, which lead to decreased comprehension. These initial concerns seem to have been somewhat mitigated by modern devices with some participants reporting that higher resolution screens made it easier for them to read than print.

> I'm just starting to have to wear readers [glasses], and I find that I can make the font much bigger on my phone or on my computer. And so if I don't have my readers nearby, I love the technology because I haven't invested in a big print Bible because they're too heavy.

As screen technology continued to improve in this manner, scholars such as Noyes and Garland (2008) proposed that paper and screen will never be entirely equivalent and that it would be more helpful to focus on the unique features of each media and the opportunities these present. Four features of this research are important to point out. First, several researchers have found that the act of scrolling on a desktop LCD screen impedes both reading and writing because users have an insufficient representation of the text compared to print (Baccino, 2004; Eklundh, 1992; Piolat, Roussey, & Thunin, 1996). In other words, the physical features of a printed book make it mentally easier to navigate and comprehend than the virtual equivalents on a screen. Second, other researchers have found that specific features of screen-based interfaces can cause problems. One team found that documents with hypertext links (such as the majority of webpages) are more mentally and cognitively demanding of readers (DeStefano & LeFevre, 2007). The time given to visually processing a link and deciding whether or not to click it impaired performance in reading and

comprehension. As we saw in the previous chapter, Bible apps add many interactive elements to the text, which may lead to similar impairment of comprehension. Third, other researches have concluded that screen users tend to spend much of their cognitive energy and time scanning screens for user interface components, and this scanning becomes so habitual that it influences what readers do when their eyes finally meet the desired text (Liu, 2005; Mangen, 2008). Rather than being focused on connecting with the message of the text, those reading the Bible on screen may also find themselves similarly distracted. Finally, based on his interviews with readers, Hillesund (2010) concluded that screens and digital media introduce new behaviors of multimodality (texts with illustrations and other content) which appear to reduce the amount of sustained reading they are capable of doing in one sitting. Some participants in this study echoed these findings when they expressed frustrations with digital Bible interfaces, such as the following users who commented on the smaller screen size of a phone and the frustration of scrolling when reading:

> If I'm studying [on] paper … it's easier for you to go back and forth because there's more of it visibly there, whereas my Bible app cuts off after a chapter and I've got to swipe to the next chapter or swipe back.

> I won't use [a Bible app on a smartphone]. I will only use it on the computer. I don't use any of the apps, because I need a bigger screen.

By 2010, when Apple released its first iPad, research began to shift from comparing print reading with desktop monitor reading toward comparing print reading with tablets and e-Readers. Again, many researchers found that print readers still had higher comprehension than screen readers (Mangen et al., 2013), but the results were more nuanced with several researchers finding that print and screen readers performed equally well under certain conditions. For example, a Beijing research team found that readers who were more familiar with a tablet performed significantly better than those less familiar with the device (Chen, Cheng, Chang, Zheng, & Huang, 2014). Ackerman found that print readers outperformed screen readers when the time was open ended, but when a time limit was enforced, print and

screen readers achieved comparable levels of comprehension. They concluded that screen readers, when given no other prompting, tended to default to a scanning form of reading which impaired their comprehension. But if factors like a time limit were introduced, it might be able to coax them into giving their full attention to a screen (Ackerman & Goldsmith, 2011; Ackerman & Lauterman, 2012). In this work, the question was whether or not a church context would provide a similar contextual clue to readers that would prompt them to avoid scanning and devote their full mental faculties to reading the Bible.

Mangen's (2015) research team found that overall comprehension between print and Kindle screens were similar, but that Kindle readers performed worse on the specific task of ordering chronological events from a narrative. Mangen's work prompted me to add a question that asked the participants to order the events from what they read to see if these results would be replicated. These more specific cognitive differences may explain why college students report preferring print to electronic copies of texts even though they find the digital copies more convenient and their final courses grades did not differ by media (de Oliveira, 2012; Gerlach & Buxmann, 2011; Woody, Daniel, & Baker, 2010). Walsh's (2016) summary of research on college students and their academic reading also found that students trust printed documents over digital ones, in part because electronic documents do not yet take full advantage of their features and also because of the concentration required for academic reading. Sun, Shieh, and Huang (2013) studied how gender, age, and educational level affected print and desktop screen reading comprehension of middle-aged adults, and they found that gender and education affected print comprehension but did not affect screen reading comprehension. Similarly, Liu's (2008) study of college students also found gender-based differences in media preferences and online browsing behaviors, while Tveit and Mangen's (2014) study of 10th grade readers showed that gender played a role in reading frequency (girls were more likely reading for pleasure) and media preferences (girls were

more likely to prefer print, while boys were more likely to prefer screen-reading), but their data did not suggest a difference in comprehension based on gender or media.

More recent studies suggest that the gap in comprehension is narrowing with some researchers finding that e-ink displays are less tiresome than LCD screens[2] leading to better recall and others finding no difference between the comprehension of print and screen reading groups (Margolin, Driscoll, Toland, & Kegler, 2013; Subrahmanyam et al., 2013). These studies lead us now to consider the way screens and Bible software may affect the act of reading the Bible. The following data looks at two specific activities, reading for comprehension and maintaining a daily reading pattern. We will see that the screen may be negatively affecting comprehension while at the same time helping users to read the Bible more often.

Bible Study Comprehension

After completing the survey on reading behavior and media preferences, we moved on to the Bible comprehension assessment. Participants were split into two groups, a print reading group and a phone reading group, and asked to read the epistle of Jude and then answer a series of six questions designed to measure their comprehension of what they read and how it affected them. One hundred and fifty people completed the reading and assessment.

The results for the Bible reading comprehension assessment followed the studies above concluding that print users generally have higher comprehension than digital readers. In this study, print users scored an average of 66.2% on the assessment compared to 59.2% for phone users (Table 7). However, it is important to note that the difference between these results is not statistically significant to the conventional measure ($p = 0.19$),[3] and that larger study groups of participants would be needed to verify the gap in comprehension observed

[2] LCD screens have a backlight which can strain the eyes of the reader, where e-ink requires an external lighting source like a printed page (Benedetto, Drai-Zerbib, Pedrotti, Tissier, & Baccino, 2013).
[3] Assuming a benchmark of $p = 0.05$ as a measure of significance.

here. It is unclear from these results if the setting of a church or familiarity with the device played any role in the difference. The data was also analyzed by age range, splitting the groups into those over 35 and those under 35. In both age ranges, print readers scored higher than phone readers, and those over 35 scored higher than those under 35, but the results were not statistically significant.[4] However, when comparing the results based on the gender of the participant, an important difference appeared.

Table 8 shows that female participants scored slightly higher than male participants, but again this difference was not statistically significant (male: 60.2%; female: 64.2%; p = 0.61). Table 7 shows that, when broken down by media, the female groups' print and smartphones scores were very close (print: 62.5%, digital: 64.2%, p = 0.56), but there was a much wider and more significant gap in scores for male participants (print: 69.8% digital: 53%, p = 0.07). This indicates that the differences in comprehension by media were primarily driven by male participants. Discussion of this gender-based difference will follow in the sections below after also considering a similar difference in the daily reading assessment.

Table 7. Print vs. Smartphone Bible Comprehension Assessment by Gender

	Print	Smartphone	p-Value
Female	62.5%	64.2%	0.56
Male	69.8%	53.3%	0.07
Overall	66.2%	59.2%	0.19

Table 8. Male vs. Female Comprehension Assessment by Media

	Female	Male	p-Value
Print	62.5%	69.8%	0.26

[4] Biblical literacy data from the American Bible Society suggests that although younger generations are less biblically literate overall, among those who are committed Christians, biblical literacy for millennials is only slightly lower than Gen-X or Boomers and in some cases higher than Elders (American Bible Society, 2019; Zylstra, 2016).

Smartphone	64.2%	53.3%	0.83
Overall	62.6%	60.2%	0.61

The assessment had six questions, the first four of which were used to calculate this score. The questions were designed to assess whether the readers could recall information presented in the text, and the answer choices were intended to prevent the need for hermeneutic or interpretive ambiguity. For example, two of the questions asked the following: "Jude mentions that he has a brother. What is his name? ☐ James ☐ Peter ☐ Andrew ☐ Thomas" and "Michael the archangel and the devil contended over whose body? ☐ Enoch ☐ Elijah ☐ Moses ☐ Christ." A third question asked them to recall a portion of the text of Jude correctly. The fourth question was not multiple choice, but instead asked the readers to correctly identify the order of three of the five Old Testament stories employed in Jude's argument. Similar to Mangen's research indicating digital readers had more trouble ordering events in a narrative, the phone readers in this study placed the events in the correct order 32.9% of the time, while the print users were correct 41.4% of the time ($p = 0.15$).

In contrast to these objective questions, the fifth question asked the users to write a short response to the prompt: "What point is Jude making by bringing up these Old Testament stories?" Their open-ended answers could be group into several distinct categories. Some only offered short statements like "do better," "God's wrath," and "I don't know," while others offered longer, more nuanced statements. The majority of longer responses emphasized God's judgment and the presence of evildoers with comments such as, "Evil men and those who turn away from following God are always at work + trying to lead others astray" and "To remain faithful in God's teaching or you will be judged by God and punished." A smaller number of participants focused more on God's faithfulness or kindness to his people with comments such as, "To show how God provided through the generations

for his people." Some also combined these themes, "God rescued and redeemed the faithful or his people but he also consistently punished/punishes disobedience. He is righteous." Interestingly, the screen readers were more likely to interpret the passage as highlighting God's faithfulness over time than the print readers were. This may indicate an association of print with a more judgmental idea of God and modern technology with a friendlier image of God. It also seems to correspond to Phillips' (2019) argument that, in digital environments, users are more likely to share verses that align with Christian Smith's Moralistic Therapeutic Deism. However, the numbers were small enough that this trend cannot be considered definitive without further study.

Finally, the sixth question of the assessment focused not on facts or interpretation, but on how the act of reading influenced their mood. The question asked: "How do you feel after reading Jude (discouraged, encouraged, confused, joyful, etc.)?" Common words among the responses were tallied and, unsurprisingly, many of them contained words from the prompt. However, while many others circled or wrote the words encouraged, discouraged, or confused, only two participants (one print reader and one phone reader) used the word "joyful" in their response. After tallying the results, the most common response among all respondents was "encouraged" but this response was more common for print readers than digital readers (44.1% print, 36.7% digital). Conversely, digital users were nearly twice as likely to report feeling "confused" (16.1% print, 30.3% digital). This difference over "confused" had a p-Value of 0.052 indicating a strong difference in affective experience between print and digital reading that is perhaps connected to the overall reduced comprehension rates for screen readers.

Table 9. Print vs. Smartphone Affective Comparison

	Print	Smartphone
Encouraged	44.1%	36.7%

Confused	16.1%	30.3%
Discouraged	7.4%	3.8%

Though I did not ask the participants directly if they had read or studied Jude before, many respondents said that they would like to "read it again" or "study Jude more" indicating their relative unfamiliarity with the epistle. All participants, in both the print and screen groups, seemed to feel uplifted by the overall feel of Jude ("encouraged"), and yet they admitted that they did not understand it after a single reading. In the focus group discussion afterward, some indicated that they felt they rarely understood a passage on the first reading and that their usual practice was to read and re-read the text several times with study material in hand in order to understand it:

> My favorite part about having it on a device is the vast information available because I don't understand 90% of what I read, even print or not. I've got to study it up.

Others, while reflecting on their reading habits, admitted that they tended to skim more often when reading on a screen compared to print even when they were reading the Bible. This tendency to skim the Biblical text on a phone appears to impede their ability to accurately recall the basics of the text on their first reading, especially for male readers. Further, even if they do correctly recall the basic factual elements of the text, the screen appears to induce a mood that is more confused, less spiritually nourished, and yet more attuned to a friendly God than a judgmental one.

If this serves as an example of where the digital Bible software may be affecting evangelical readers in ways they would consider negative or in opposition to their goal of knowing and understanding the Bible, the daily reading plan data below may indicate that Bible software also produces positive effects in line with evangelical values.

Daily Bible Reading

The final instrument was a ten-day reading plan for the Gospel of John. For each day of the plan, participants were asked to read two chapters or an average of 1,950 words. Participants using smartphones were given a step-by-step instruction sheet showing how to enable the YouVersion plan on their phone and given time to follow the steps and ask questions. During this process, they were also asked to enable reminders and select a time each day for the reminder to appear on their respective smartphones. After ten days, the participants were sent an email with a link to a survey where they could report their reading progress. Of the one hundred and fifty participants who participated in the previous parts of the study, seventy-eight answered the reading plan survey. Some users gave non-standard responses, such as reporting that they had ignored the plan they were given and continued a plan they had started before or that they had started with one media and transferred to another.

After filtering out these disparities, the data indicate that smartphone users completed a higher percentage of days than print readers (Table 10) and, as with the comprehension results, this difference was more acute among male participants than female participants (Table 11).

Table 10. Print vs. Smartphone Bible Reading Plan Comparison by Gender

	Print	Smartphone	p-Value
Female	2.83 days	3.77 days	0.264
Male	4.58 days	7.75 days	0.032
Overall	3.68 days	5.53 days	0.053

Table 11. Male vs. Female Bible Reading Plan Performance by Media

	Male	Female	p-Value

Print	4.58 days	2.83 days	0.140
Smartphone	7.75 days	3.77 days	0.032
Overall	6.27 days	3.36 days	0.016

The data in Table 10 shows that participants who used smartphones finished almost two more days of reading than print Bible readers with a high level of statistical significance (print: 3.68 days, phone: 5.53 days, p = 0.053). When the gender of the participants was taken in account, the data indicate that women read almost one day more on their phones compared to print, but this difference was not statistically significant (print: 2.83 days; phone: 3.77 days; p = 0.264). In contrast, men using a Bible app read an average of more than three additional days than those using printed Bibles, and this is verified by a statistically significant level (print: 4.58 days, phone: 7.75 days, p = 0.032). This means that, like the difference in comprehension, the overall difference between print and smartphone daily reading can largely be attributed to male readers.

The data in Table 11 inverts the values to further explore the differences between male and female readers in overall reading behavior. These data indicate that male participants finished a higher number of days of the Bible than female participants in both print and on phones. Overall, males finished almost twice as many days as females (male: 6.27 days, female: 3.36 days, p = 0.016). However, this difference was wider on smartphones (male: 7.75 days, female: 3.77) than in printed Bibles (male: 4.58, female: 2.83 days). The printed Bible difference of approximately one and a half days was not statistically significant (p = 0.14), but the smartphone gap of nearly three additional days was statistically significant (p = 0.032). This indicates that smartphone differences contributed to the overall reading gap between men and women seen in Table 10. It is noteworthy that the participants used the same media for both the comprehension assessment above and the reading plan, meaning that the men who scored poorly in reading comprehension using a smartphone were the same

group of men who read more days on average using their smartphones. Likewise, the print users who scored higher on comprehension using print were the same group who read fewer days of the reading plan in print. This result is initially surprising because it runs counter to studies indicating that women read the Bible more often than men (Goff et al., 2017, p. 17), and therefore it is possible that results are due to errors in reporting similar to errors seen in church attendance (Brenner, 2016). However, the findings are in line with studies indicating differences between the ways men and women read the Bible (Friesen, 2017) and in how they use digital media which we will consider below.

Smartphone users were also asked if the reminders were helpful in prompting them to read. A small number of participants reported ignoring the reminders and not reading, and others reported that they had not been set up properly and therefore had no effect. But those who did have daily reminders enabled answered that they were helpful, and the data show that they read the greatest number of average days of any group. This corresponds with Hutchings' interviewees, who said that reminders "keep me accountable" and help them meet their reading goals (Hutchings, 2015b). This indicates that the effects of the digital Bible on evangelical readers do not come exclusively from Bible software or phone hardware, but from the combination of the two working together. It also serves as another example of evangelical HEP adopting existing features (notifications) and repurposing them according to their values to great effect.

Finally, it is worth noting that the users' initial perception of the place of smartphones in their religious lives differed at the outset of the study compared to the end. In the initial in-person survey, participants were asked if the digital Bible had had a positive, negative, or mixed effect on their Bible engagement, and they were asked a similar question in the follow-up reading plan survey. In the initial survey of all participants, more than 52% of the participants left comments indicating that digital media had some positive impact on their

Bible engagement, 43% said that smartphones had no effect on their religious practices regarding scripture, and only 3% said it had a negative or mixed impact. Several included comments such as “I’m vastly more engaged since I can read the Bible just a few seconds at a time, anywhere,” and many others emphasized how the convenience and accessibility of the phone allowed them to read the Bible more often and in more situations.

This positivity was even more pronounced in those who reported back for the reading plan. In the initial survey, more of them reported a positive impact from digital media (64% compared to the 50% of the wider group) and they were less likely to report negative or mixed feelings (2.5%). However, these results shifted significantly after they experience the reading plan. In the same participants, negative perceptions of phones rose from 0% to 25% and while positive perceptions fell dramatically from 64% to 27%, and the number of participants who said digital media had no effect dropped from 34% to 24%.

Table 12. Impact of Digital Media

	All Participants	Reading Plan Before	Reading Plan After
Positive	52%	64%	27%
Negative	<1%	0%	25%
Mixed	3%	2.5%	24%
No Effect or Blank	43%	34%	24%

This shift may indicate that evangelicals tend to have an overall positive impression of technology especially when asked in a group setting, but after actually using it they are more prepared to acknowledge its downsides and how it may be negatively affecting their spiritual goals. In other words, by default and in group settings, their orientation toward technology is characterized by Hopeful Entrepreneurial Pragmatism, but when confronted with specific use cases and offered the chance to respond individually without group dynamics, they are more

reflective about technology's tradeoffs and downsides. This may also indicate that Hutchings's (2017b) argument that Bible software is persuasive holds, but that is heavily influenced by the hardware on which it runs which is, in turn, tempered by a person's current attitude toward their phone and its place in his or her individual and social life. At the same time, however, even when evangelicals return to print Bibles, their use of Bible software appears to have reoriented some of their expectations, such as always having access to Bible search and comparison features on their phone and being able to tap a word or verse to see explanatory notes that provide "secondary perspicuity."

Focusing on the Bible in a Digital World

One reader responded to the Bible Reading Plan survey with the following comment: "When reading on the phone I feel like I was less engaged than when reading a paper Bible. It felt a little more like skimming an email to get it done rather than really studying God's word. I do like the electronic reminder." Meanwhile, another wrote, "I would have been more consistent if I had used my phone." These comments encapsulate much of the complexity latent in these findings, including that evangelicals value "really studying God's word" and being "consistent," but that there are tradeoffs with each medium they use to engage the Bible. They might view the printed Bible as more authentic, but simultaneously see the digital Bible as better at keeping them on track. And they might appreciate the phone reminding them to read, but then feel frustrated by their tendency to skim.

These comments are consistent with the data presented above, indicating that, when it comes to helping evangelicals accomplish their goal of regularly reading the Bible, smartphones are effective, especially when users enabled the reminder feature. However, many users expressed worries that the convenience of the smartphone might be overshadowed by its capacity for distraction and the impulse to skim rather than read deeply, and the data on comprehension indicate that these worries are not unfounded. The paradox of

being helpful in one sense and yet worrisome in others was most clearly seen in the results indicating that smartphone users were more likely to read the Bible daily and yet their comprehension suffered on the same media. Though comprehension cannot be considered the only important element of Bible engagement, it is at least partially a prerequisite for Bible study, and this data would suggest that exclusively using a phone for Bible study may be less than ideal. This leads us to ask what might be causing this lack of comprehension, and why it appears to affect men more than women. Similarly, for evangelicals who value daily reading, we might also ask why the men in this study completed more days of the plan and why they responded to the phone prompts at higher rates than the female participants.

Gender-Based Differences

The gender-based differences observed here were unexpected, but they may be explained by drawing on research from several areas, including children's reading comprehension, gender-based media preferences, and the religious habits of adults. While the research on print and digital media cited above did not find any gender-based comprehension differences in adults, there are indications of gender-based comprehension differences among children. Logan and Johnston, in their review of reading comprehension tests in a print environment, conclude that "girls consistently outperform boys on tests of reading comprehension," but they add that, "the reason for this is not clear" (Logan & Johnston, 2010, p. 175). Another recent study found that, although boys scored higher on standardized tests, when it comes to reading "girls showed significantly higher reading scores than boys across every wave of assessment and in every grade" (Reilly, Neumann, & Andrews, 2018, pp. 446-447). The authors do not offer a firm conclusion as to the causes of these differences, but they explore potential reasons including differential rates of maturation, gender differences in lateralization of brain function, gender differences in variability (including boys being overrepresented in populations with reading impairment, dyslexia, attention disorders),

gender differences in externalizing behavior and language competence, and gender-stereotyping of reading and language as feminine traits. In one of the very few studies that consider gender when studying screen and print comprehension rates, Sun's (2013) team found that, among middle-aged adult readers, there was a gender-based difference in reading comprehension for print readers. However, their data indicated no statistically significant difference in comprehension between male and female subjects for screen reading. In the present study, however, male participants performed better than female participants in print, but females outperformed males when reading on screens.

Though this comprehension difference appears to be a new finding among comparisons of print and screen reading, the gender-based difference in daily Bible reading habits may be more in line with data suggesting differences in religious behavior and media preference among men and women. Trzebiatowska and Bruce (2012) argue that across all cultures, women are more religious than men, but that when technology and secularization reduce the differences in men and women's roles, it may also close the gap in religious behavior. More specially, Pew found that women read scripture at higher rates (40% vs. 30%) than men (Pew Research Center, 2018) and the American Bible Society's State of the Bible also indicate a variety of gender-based differences in attitudes about the Bible. As with the Pew findings, women report reading the Bible more often, and they were more likely to have increased their reading in the last year. ABS also found that women were more likely to experience a sense of connection with God when reading the Bible. Women were also more likely to have installed a Bible app and used it regularly, while men were more likely to have used an audio version of the Bible.[5] This overall portrait of women being more engaged with the Bible and their faith might explain their higher rates of comprehension, but it might also suggest that

[5] Women were also more likely to say that the most important biblical command is "Do justice, love mercy and walk humbly with God" (51% female; 49% male) while men were more likely to choose "Go and make disciples" (11% male; 5% female) (American Bible Society, 2019, pp. 59,64,79,84-47).

they would have completed more of the reading plan. However, in Hutchings' survey on digital Bible reading, men claim to read the Bible more often than women, and they also reported being more likely to use Bible app features like digital commentaries and reading plans (Hutchings, 2015a, p. 432).

The difference Hutchings found related to Bible-related app usage corresponds with broader data suggesting that men and women have different technology preferences and tend to view their devices differently. As previously mentioned, Tveit, Mangen, and Liu found a variety of gender-based differences including overall reading preference and frequency, preferred device types, and the kinds of activities they prefer to perform on those devices. Shashaani and Khalili (2001) have also shown that confidence levels regarding digital media differ by gender with women showing stronger beliefs in equal gender ability using computers, but less self-confidence in their own ability. Other studies indicate that men are more likely to choose competitive environments and overestimate their abilities (Niederle & Vesterlund, 2007), and it is possible that overconfidence in their ability to use screens contributed negatively to their comprehension score, while their competitiveness led them to perform their daily reading more often on both phones and in print.

Studies on leisure habits also suggest additional differences in male and female reading patterns and screen usage. Even before adolescence, young boys and girls show distinct media preferences and reading behavior. A survey from the National Literacy Trust (Clark, 2012) found that boys were more likely to read on screen (65.7%) than in print (55.4%) outside of school. The survey also found that girls were more likely to read print outside of school than boys (boys 55.4%; girls 68.3%). Other researchers have found similar differences in adult reading habits and preferences, such as choosing authors of their own gender and diverging in how they go about finding books (Summers, 2013, pp. 247-248). In adulthood, a study from the U.S. Bureau of Labor Statistics indicates that men are also much more likely

to fill their leisure time with "Playing games and computer use" and "Watching TV," while women were more likely to spend their time "Reading" and "Socializing and Communicating" (Bureau of Labor Statistics, 2014). These data indicate that into adulthood, women continue to be more likely to read for pleasure, while men are more likely to use screens for entertainment during their leisure time.

In addition to differences in screen usage during leisure time, traditional gender roles and differences in working hours may also contribute to differences in the net amount of screen-usage between men and women. The U.S. Bureau of Labor Statistics indicates that, of men and women who work, men work on average almost a full hour per day more and that women are more likely to work part-time. It is possible that the longer work hours correlate with more digital media usage, which influences screen reading behavior among men. Although participants in this study were not asked directly about income, jobs, or gender-roles, observation and comments from female participants about reading the Bible while waiting in a carpool to pick up their children from school indicate that the participants in this study follow a more "traditional" division of labor and would follow the national statistics on work, indicating that male participants in this study are more likely to engage in work-related screen-reading than the female participants. This increased use of screens during leisure and work and may have influenced the male participants both in their propensity to skim on screen resulting in decreased comprehension and in the likelihood that they would respond to phone reminders leading to higher rates of daily Bible reading.

Together, these data indicate that while the comprehension difference found here in Bible reading is unique among print and screen reading tests, it fits within a larger body of research showing gender differences in religious, reading, and media behaviors. Likewise, though ABS's State of the Bible indicates that women are more likely to use regularly use Bible apps, the finding here that men completed more of their reading plan using digital media may

correspond with gender-based difference in work and leisure usage of screens. Continued work on gender and other demographic categorizations may prove to be a fruitful area for future research as it brings together biblical literacy, technology usage, and religious behavior.

Benefits Versus Distractions

Although the participants did not suggest that there might be such gender-based differences in print and digital Bible reading, they did discuss problems that they had observed in their own lives with smartphone usage that might have contributed to the results we observed above. When they spoke about their preferred media for engaging the scriptures, a common refrain was that Bible software itself was not inherently problematic, but because it sits alongside other more distracting tools that constantly vie for their attention, they found it challenging to keep themselves focused when reading the Bible on a phone. Many of the participants referred to "notifications" and "distractions" or even "temptations" when speaking of using their phone to read the Bibles. The following two participants offered representative comments on the experience of attempting to read, but then being pulled out of the Biblical text by some other apps:

> For me, anything where it's going to be longer than just a little bit of reference, it's just too easy to get distracted on the phone… There's no long reading there. There's no focus, there's no meditation, because as soon as I get an email, someone likes a tweet, notifies me of my baseball team's score, I'm instantly pulled away from whatever else I was trying to do.

> The other reason I don't like digital is, because I feel like you get a quick notification of anything on your phone, and all of a sudden I'm not studying what I was studying any more. Now I'm looking at Facebook, or now I'm looking at that text, or now, whatever. If I'm reading the [printed] bible, I can just put this away, and I'm not distracted—other than by kids and stuff, but it's not the same.

Notice, the first user still prefers to use digital tools for "a little bit of reference," but feels that experience has shown him that anything longer leads inevitably to distraction. She used words like "focus" and "meditation" to describe the experience she desired from the Bible

and noted that all the other functions and applications on a phone made these difficult to achieve. The second reader echoes these comments, focusing on the notification feature of phones which come often enough to draw the person's attention away from reading the Bible. He acknowledges that there can be distractions ("kids and stuff") when reading a printed Bible, but sees this as a distinct category because those interruptions are external to the medium of print and perhaps easier to control, whereas the distractions on the phone are an inherent part of its functionality and seem more difficult to manage.

The multipurpose nature of phones led many of the participants to report that they found it challenging to use their phone for a single task for very long. These participants wanted to read or study the Bible, but they found themselves powerless to resist the "quick notification" for any number of things, each of which leads to being "distracted." But conversely, it was these very notifications that led some of the participants to read the Bible more frequently than print readers or digital users who did not enable notifications. Other participants added to concerns about notifications, worrying that the sheer number of competing apps on a phone might call into question the idea that an electronic Bible would lead to more reading. One participant said, "We've got so much on our phone, that we can't keep our focus on anything." These comments seem to be an expression of "attention economics," a field pioneered by Davenport and Beck where they defined attention as "focused mental engagement on a particular item of information" (Davenport & Beck, 2001, p. 20). Written almost a decade before the emergence of the smartphone, they went on to argue that attention would become a more important currency than dollars in the economy to come. Their ideas appear to have been quite prescient, and recently, a variety of resources have emerged that attempt to help people avoid overusing their smartphones. Apple, for example, released a feature called Screen Time in 2018 that shows users how often they use apps and lets them set limits to help them curb activities they would rather not do. This feature was partially in

response to the work of former Google Design Ethicist Tristan Harris who formed the organization "Time Well Spent" which seeks to reverse what he calls the digital attention crisis (Bosker, 2016). In addition, Christian themed books such as *The Common Rule: Habits of Purpose for an Age of Distraction* (Earley, 2019) offer guidance on how to structure one's life in such a way so as to avoid the pull of digital distractions. This all suggests that Bible software cannot be understood as an app in isolation, but as one of many competitors for the attention of evangelical technology users.

Other users expressed another layer of concern about what they perceived to be a larger problem of technology dependence that was incompatible with their spiritual values. Early on in a group that met during the evening, one participant immediately offered a negative assessment of using a phone to engage the Bible because he felt that it fit within a societal pattern of people becoming too dependent on devices to perform functions they should be able to do themselves. He drew a parallel to the way calculators have led to a decreased ability to do basic mathematical operations:

> Take a look at what the calculator has done to the way we discipline our minds to remember and take in knowledge and data and be able to critically think through that. You take a look at similar things like Google. If I don't know it, what I do? I quickly grab a device and look up what I don't know … Along those lines, same question similar to the calculators, we set up applications that remind us to study [the Bible]. The question I've got is, what does that say about our heart for wanting and desiring to do these things? And setting aside and making it important in our own heart in our life to do these things?

Nicholas Carr (2010) has marshaled several studies arguing that our memories can be weakened by dependence on technology, and Pew data shows that smartphone usage continues to rise among all age groups (Jiang, 2018) suggesting that such concerns are not entirely unwarranted. Non-religious popular articles regularly warn readers about the danger of technology dependence (Gregoire, 2013; Johansson, 2018; 2013), but this user seems to be suggesting that while there is no great moral concern in ceding mathematical authority to a calculator or basic knowledge to a Google search, there is a spiritual concern in outsourcing

the discipline of a daily Bible to an electronic reminder. Again, the importance of daily Bible reading is not under question, but for this man, the means of accomplishing this goal and consequences of those means should be interrogated. Unlike other participants, he makes a direct connection between the state of one's "heart" and one's use of technology and media. In other words, if a person reads the Bible every day, but only does so because a device reminded him or her, is this spiritual progress or not? The quantitative data from this study suggests that electronic reminders do increase the overall amount and frequency of reading, but as this user suggests, it may not have the same outcome as a self-willed style of reading.

While the comments above are framed in terms of the negative qualities of electronic media, other users spoke of how their experience using digital Bibles had created an awareness of positive attributes in printed Bibles that they had not previously named. While the daily reading, power searching, and cross referencing that digital media provides is important and valuable, the following user offered comments about a kind of serendipitous reading that he finds more readily available in print and which he found captures his attention for longer:

> I just find that when I look at the actual physical Bible I'm more apt to stay in there and roam, read the two verses that somebody's mentioned, and then I may continue on. The next thing you know, I've read three pages. Where this device, I tend to read just the one or two. I might go one or two verses more, and then I'm out.

He went on to say that reading a printed book feels like he is in a "big, open space" while reading on digital media, particularly a phone, feel like he is "sitting in a little chair." Again, the thrust of his comment is related to the overall evangelical value that more Bible reading is better, and whatever medium is most capable of producing this is considered superior. But he is arguing that, for all the power evangelical developers have put into the software, ultimately the medium of a print book does more to capture and hold his attention than is possible in a screen-based reading environment. And yet, while many focus group participants expressed

similar concerns about attention, focus, and distraction, other users gave examples of how they had found ways to minimize distracting notifications, creating a similar level of focus that they could achieve in reading a printed Bible.

> About all the distractions—I use my Kindle because I don't get notifications. [And I adjusted my phone so that] I don't get many notifications. I've done probably 70-80% of my Bible reading this year on my phone, and another 10 or 20% on my Kindle, and precisely 0% paper Bible.

By this participant's estimates, he no longer uses a printed copy of the Bible to engage with scripture, because he intentionally uses either a device without notifications ("my Kindle") or a phone setup with minimal notifications. Interestingly, this is one of the recommended strategies offered by the books and organizations mentioned above for helping people achieve a better life balance. But note that his comments came before the advent of those resources, indicating that evangelicals' willingness to hopefully embrace technology and entrepreneurially experiment with it can sometimes result in a forward-looking relationship with technology that anticipates changes in society rather than merely reacting to them.

The Social Shaping of Bible Software's Impact

In the previous chapter, we saw that Bible software augments and expands the forms of engagement available to Bible readers, and in this chapter, we have observed some the effects this change has brought. In line with Hutchings' (2017b) argument on persuasive computing, it appears that evangelical developers have been at least partially successful in changing the behavior of evangelical readers as demonstrated in the case of daily Bible reading. However, the effects of this change appear to be as much due to the hardware of the phone and its constant presence as it is with the design of the software itself. Conversely, the negative effects on comprehension also appear to be largely due to the hardware of the screen and the larger social shaping context of apps, notifications, and social media.

Audio engineer Krukowski (2019, pp. 43,62) argues that when we as a society adopted the mobile phone, we made a kind of trade-off where we sacrificed sound quality in conversation for the convenience of being able to talk to one another anywhere. What we have seen in this chapter is that Bible software presents a similar trade-off between quality Bible reading and the convenience of being read the Bible anywhere. You cannot have a "quiet time" in a grocery store, but you can finish a reading plan. At the same time, Bible software, when used alongside a printed Bible, appears to deepen one's understanding of the text, its interrelatedness, and its importance in one's life. In addition, print, screen, and audio Bibles offer unique ways of enriching relational connections and understanding one's religious identity. In this sense, the digital Bible sits within a much larger network of people, ideas, and rituals, each of which Christians must navigate in their religious experiences.

CHAPTER 8:
CONCLUSION

In late 2016, scholars from the University of Kentucky and Hebrew University of Jerusalem announced that they had used X-Ray scanners and a tool technique they called "virtual unwrapping" to read the oldest Hebrew scroll ever discovered. The scroll had been part of the Dead Sea Scrolls collection found nearly fifty years ago, but it was damaged in a fire and was charred too badly to unroll. Thanks to their ingenuity in repurposing 3D imaging software that had been funded by Google and the U.S. National Science Foundation, they were able to generate a readable copy of a passage from Leviticus (Seales et al., 2016). In a sermon at an evangelical church, I imagine that this story could be used as a metaphor to illustrate any number of spiritual principles, but here it serves as a reminder that Christianity, the Bible, and technology have had a long, intertwined relationship. From the early Christians who decided to adopt the codex over scrolls, to the invention of the printing press, and to the first attempts at using computers to study the biblical text, there have always been enterprising individuals willing to combine their love of the Bible and their fascination with new technology. However, their experiments did not merely produce new, more useful tools. Instead, those tools and the system of values embedded in them also created new ways of engaging with and understanding the Bible.

This thesis set out to investigate the question of how Bible software changes the way that readers engage the scriptures and what role evangelical programmers have had in that change. I have taken a social shaping of technology approach in order to examine both the production and consumption sides of Bible software, keeping the broader societal context of technological development in mind. As I have shown, evangelical institutions and individual evangelical technologists have played significant roles in the creation of consumer Bible

software, and as evangelical readers have adopted desktop, Internet, and mobile software, they have in turn changed and modified some of their reading habits and attitudes about the Bible. In tracing this journey, I have surfaced several key attributes of evangelicalism, including an orientation toward technology theorized as Hopeful Entrepreneurial Pragmatism (HEP). This framework helps explain why evangelical programmers were so attracted to creating Bible software and why Christians from evangelical backgrounds have been so willing to embrace Bible apps. At the same time, HEP allows Bible software to serve as an avenue through which to reexamine the way evangelicals tend to negotiate cultural change. Evangelicals often want to engage with popular culture while also resisting it at the same time, and Bible software allows them to hold these two impulses in tension. Their hopeful outlook on technology allows them to address moral concerns about new media while also being free to adopt technology as a way of expressing their values. Their entrepreneurial spirit allows them to stake out conservative moral and theological stances while remaining relatively flexible in how they express those convictions. These decisions are evaluated through a pragmatic outlook, an approach that focuses on outcomes and getting to work on a problem even if all the details have yet to be worked out.

In the case of the programmers, we have seen that the history of Bible software is not so much that of competing industry titans, but an interwoven tapestry of evangelical ministries, universities, and companies. Though some do indeed compete for customers, and many companies have since come and gone, the teams at Faithlife, Bible Gateway, and YouVersion illustrate the flexibility and resilience of evangelicals, especially those with the right mix of technological innovation, business savvy, and good timing. These three companies have very different business models (sales, advertisements, and donations), and they arose in different eras of technology (desktop computers, the Internet, mobile devices), but each has been able to successfully merge technological opportunity with their evangelical identity and purpose.

The individual programmers and designers within each organization feel that technology is a good gift from God and that part of their Christian calling is to use their skills to benefit the church and reach the world. The HEP orientation allows them to move seamlessly between the realities of running a software company and their beliefs about the mission of God in the world. One important aspect of their mission centers around the shared evangelical emphasis on the importance of the Bible, not merely the belief that it is inspired and authoritative, but that Christians should regularly and substantively engage with it. Though each company goes about it in unique ways, they share a common goal of increasing Bible engagement and a common approach of using any technique they can imagine.

The team at Faithlife tends to focus on increasing the quality of engagement, gearing the content and functionality of Logos toward helping scholars and pastors work smarter and faster. They spoke of seeking out inspiration from a variety of non-religious technology and design sources in hopes of adopting anything they felt would make their product better for their customers. YouVersion on the other hand, as a more consumer-oriented product based in a church, has focused its product on increasing the quantity of Bible engagement following a deep belief that the more people engage with scripture, the more their lives will change. At times, they follow trends in the app industry on things like menu navigation and reminders, and at others times, they follow their theological instincts, creating social features they believe embody their understanding of Christian community. In each case, the source of the inspiration is not as important as the end goal: increased Bible engagement for the purpose of changing lives. But the companies, Bible Gateway and YouVersion, in particular, feel this mission extends beyond changing the lives of those who are already Christians. Instead, they also want to reach outside the walls of the church and increase Bible engagement globally by bringing more people to faith. At this intersection of Bible and technology and faith and

business, each company sees opportunities for fruitful Christian mission, and they continue to work hard to build products that they hope will change the way people read the Bible.

Indeed, this project has also shown that the fruits of their labor have had an influence on the way that Christians interact with the Bible. But where the codex replaced the scroll, and the printed Bible replaced handwritten ones, Bible software does not appear to be replacing the printed text for everyone. Much like the promise of a paperless office never materialized, it appears that a paperless Christianity is nowhere near the horizon. Instead, while a small group of users reported reading the Bible exclusively in digital form, the majority of participants indicated that they used both print and digital Bibles, sometimes side-by-side and sometimes choosing one over the other based on the form of engagement they wanted to accomplish. Though they still preferred print for quiet, devotional readings, they like to use their phones for quick searches and their desktops for more in-depth study, and they were divided on other features like note-taking and highlighting. They also indicated that their choice of media was informed and shaped by different social situations. Some users who wanted to read a Bible passage at work chose to use their desktop computer in hopes of being discreet, and even the most tech-savvy parents preferred to read to their children in print. Others preferred to use their phone but refrained from doing so when they felt it might distract others in a worship setting. They also admitted that even though they felt print was better for deep, focused, distraction-free reading, they often chose what I refer to as the Nearest Available Bible (NAB), or the most convenient form of Bible media at their disposal. In most cases today, this is the phone they always carry, meaning that the Bible is more available than ever to read, but also that it sits alongside an increasingly long list of other apps vying for one's attention. Bible readers are not simply choosing between print and "Bible software," but instead they are making a series of complex choices based on the capabilities of the software, the convenience of the hardware, and the particular social

situation. Thus, I have argued that the influence of Bible software cannot be adequately understood apart from the hardware on which it runs and the elements of digital culture that surround and permeate it.

The adoption of digital Bibles and the process of choosing which medium to use for a set of goals and constraints have, in turn, begun to affect how evangelicals engage with and understand scripture. Many Bible apps provide study resources such as notes, commentaries, and original language tools, and the users in this study expressed appreciation for how these helped them in their study. But these features also seem to have shifted their expectations of their print Bibles and even their relationship to the Bible itself. Several users spoke of how the experience of tapping on words and following links to resources within their Bible apps had created a habit such that they expected to have the same experience when they went back to their printed Bible. Perhaps more significantly, some also spoke of relying on these resources rather than "the Bible alone" for interpreting the text. Whereas the Protestant doctrine of perspicuity teaches that meaning of a Biblical text can be known by anyone without an authoritative interpreter, what I have called "secondary perspicuity" appears to be an emerging belief among some digital Bible users that they can still arrive at the correct answer as long as they have the right app installed with the right resources unlocked.

In addition to changing attitudes about the nature of the Bible, we have seen that evangelical programmers have been at least partially successful in their hopes of influencing Bible engagement. On the one hand, the data in this study indicates that digital reading plans, such as those offered by YouVersion and other vendors, do tend to increase reading frequency. Although the long-term effect of these plans on reading is unclear, in the short term, by adopting conventions like phone notifications and taking advantage of the social nature of phones and digital media, YouVersion appears to be meeting its goal of encouraging people to read the Bible more regularly. At the same time, this study brings up

questions about what comes alongside increased screen-based Bible reading. At the beginning of the study, many of the participants reported a very positive outlook toward technology, but after the comprehension assessment and 10-day reading plan, a large percentage changed their view. Initially, they expressed a more neutral outlook on technology indicative of HEP, but after an experience with technology and time to reflect on it, many were less enthusiastic and more likely to speak of Bible apps in terms of trade-offs. One of these trade-offs came in the comprehension assessments, which found that reading a Bible on a screen tended to decrease comprehension, especially for men. In addition, screen readers were less likely to say they had experienced a sense of "encouragement" and more likely to report being "confused." Granted, they were reading Jude, which is not among the Bible's most straightforward or encouraging texts, but whatever confusion Jude might produce on its own, the effects seemed to be more pronounced in the digital environment. At the same time, when asked about the meaning of Jude, the phone readers were more likely to speak of God in terms of faithfulness, while print readers emphasized the judgments in the passage.

These observations point to areas of future research that could build upon the work presented here. The longitudinal data on Bible app adoption by the American Bible Society continues to be very helpful in tracking overall electronic Bible usage relative to print, and this thesis adds color and meaning to that data by looking at specific forms of engagement, comprehension, and daily reading. In the future, more work could be done to understand how screen-based Bibles influence the way people conceive of the Bible itself and how they interpret it. In the example above, this study hinted that reading the Bible on a screen may cause some readers to see a kinder, gentler God instead of the judgmental God they might see in print. Future researchers could replicate the print and screen comparison studies approach modeled here, but broaden them to include more types of Biblical genres, including poetry, prophecy, and narrative. And, in addition to assessing comprehension and interpretation,

future studies could also develop additional metrics that would further probe how media influences the experience of Bible engagement. Such studies could also be conducted among larger, more diverse populations of readers, including those from different denominational and ethnic backgrounds, providing a richer dataset from which to examine how different Christian traditions understand the relationship between technology and the Bible. The growing use of audio Bibles also appears to be a relatively untouched avenue for research, and one that could draw from the deep well of research on orality and post-literacy. Finally, expanding this study outside of the West and into the Global South and East where Christianity is growing might shed light on where Christianity and the digital Bible is headed.

One of the first questions I asked the participants in this study was how they felt their engagement with the Bible had changed since they first started using Bible apps. Many of them shared stories of their excitement and frustration with digital Bibles, but a few surprised me when they said they regularly used digital Bibles, but that it had not brought any change. This initially puzzled me, until I read on responder's explanation: "I became a Christian after the advent of the smartphone." These words remind us that, as a new generation encounters the Bible for the first time, they will not experience it exclusively orally as in the days before the printing press, or primarily in print as was the case for the last several centuries. Instead, for them, "the Bible" will always be a multi-media category, and they will have more complex decisions to make about which combination of Bible media they want to use. If the evangelicals in this study are any indication, the next generation will continue to find ways to faithfully navigate whatever comes, embracing new technology while holding onto what they believe is essential. As the prophet Isaiah might say, technology will advance and media will change, but the scriptures will remain a constant.

APPENDIX 1: PROGRAMMER CONSENT FORMS AND QUESTION

The following three pages are the consent forms given to the individuals at Logos Bible Software, Bible Gateway, and YouVersion, followed by the interview questions asked of each team.

Durham University

DIGITAL BIBLE PROGRAMMERS
INTERVIEW INFORMATION AND CONSENT FORM

Researcher: John Dyer
j.c.d.dyer@durham.ac.uk
214-274-6173

Project Title
The Habits and Hermeneutics of Digital Bibles:
An Investigation of Behaviours of Engagement Encouraged By Software Developers

What is the Research?
This project is about how the products created by digital Bible programming teams shape how ordinary people read the Bible. It will investigate this by talking to those involved in designing software for electronic Bible reading and by talking to those who use this software. This project is part of a research Ph.D. thesis in Theology and Religion, based at Durham University in Durham, England.

Why have I been asked to participate?
You have been asked to participate because you are a member of a Bible software development team that develops a widely used product.

What will happen?
This information will be gathered within small group discussions. Team leaders may be interviewed separately to help better understand certain specific duties. This is voluntary and your participation in one does not require the other. Your honest answers are encouraged. There are no right or wrong answers. Hearing from a variety of viewpoints will enrich the discussions.

Privacy
Your privacy will be protected. Your name will not be used in any report that is published. Only anonymised names will be used in the report.

Audio/Video Recording and Transcription
The interviews will be audio/video recorded. You may ask that the recording be stopped at any time to take a break. Records will be transcribed for research. Any audio/video recordings and transcriptions will be stored securely on a password protected hard-drive.

 Subject's Initials___________

FOR THE PARTICIPANT

- I voluntarily agree to take part in this interview.
- The nature and purpose of the research in which I am involved has been explained to me in writing.
- I authorize the researcher to use the data I provide but understand that my name will be changed and other identifying details disguised.
- I understand that any recordings (both audio, video, and written) undertaken are for the purpose of transcription of data and will be stored securely.
- I understand that I may ask further questions at any time.
- I understand that I may withdraw from this research and remove permission for any data obtained from me to be used without giving a reason for withdrawing. If I wish to withdraw permission, I will contact Mr John Dyer to request this.
- I understand that research data may be used in a doctoral thesis, subsequent publications, future research, and teaching in theological and ministerial contexts and give my consent for this.
- I have received a copy of this consent form for my own records.

Participant's Name:____

Address:____

City:____ State:___________ Zip:____________

Telephone number:____

Email:____

Signature:____Date:__________

Subject's Initials___________

DIGITAL BIBLE PROGRAMMERS
Interview Questions

Thank you all for taking time to talk to me today. I'm here because I'm really interested in the role of digital Bibles in the present and future of the Church. As a Bible software developer myself, I want to know more about how programmers like us are contributing to how people engage with the Bible. I have about 10 or 15 questions that I hope will generate some good discussion. Of course, there are no right or wrong answers to any of these questions, so please feel free just to be as open as you can.

Introduction
To kick things off, I want to ask each of you a bit about yourselves and the company as a whole.

1. Could each of you go around and say your name and role at the company?
2. Can each of you tell me how you got into this business – making digital Bible software?
3. *Whoever has the best memory*, can you tell me the story of how the software got started?

Goals
Let's talk for a bit about the software itself with a focus on the mobile versions.

4. What do you hope people do with your software? [Put another way, what is the ideal form of engagement you'd like to see?]
5. What would you say you most want users to get out of the software? [In other words, what are the benefits or advantages it offers to various kinds of people?]
6. How have you crafted the software to encourage these practices?
7. How do you measure whether or not your product is successful?

Process
I'll like to talk about the software development process. We all know software changes over time, and I'd like to hear you talk about how you go about this.

8. How do you go about making decisions to add or change a feature?
9. Talk to me about how you manage creativity - Where do ideas come from?
10. Could you address the role of user analytics data in your software development?
11. *We all know that if you haven't had a good failure you might not be trying very hard, so* could you tell me about an idea that failed and what you learned from it?

Reflection
Before we go, I'd like to hear more about where you see all of this digital Bible stuff going in the future. It's been said that the printing press was the catalyst for major change within the church…

12. What kinds of changes do you see digital Bibles making to the church?
13. How you understand the relationship between digital and print Bibles?
14. If you don't mind me asking, could each of you to describe how you personally use digital Bibles in your own life and in your family?
15. Finally, is there anything that we haven't covered that anyone would like to bring up?

Rev. 01: October 2014

APPENDIX 2: USER SURVEY AND ASSESSMENT

The following five pages are the consent form, Bible media survey, Bible reading assessment, Bible reading plan for print readers, and questions asked during the group discussion.

Durham University

DIGITAL BIBLE USERS
INTERVIEW INFORMATION AND CONSENT FORM

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Project Title
The Habits and Hermeneutics of Digital Bibles:
An Investigation of Behaviours of Engagement Encouraged By Software Developers

What is the Research?
This project is about how the products created by digital Bible programming teams shape how ordinary people read the Bible. It will investigate this by talking to those involved in designing software for electronic Bible reading and by talking to those who use this software. This project is part of a research Ph.D. thesis in Theology and Religion, based at Durham University in Durham, England.

Why have I been asked to participate?
You have been asked to participate because you are a member of [__________________] who has be identified by the pastoral team as a good candidate for research.

What will happen?
This information will be gathered by small group discussions. This is voluntary and your participation in one does not require the other. Your honest answers are encouraged. There are no right or wrong answers. Hearing from a variety of viewpoints will enrich the discussions.

Privacy
Your privacy will be protected. Your name will not be used in any report that is published. Only anonymized names will be used in the report.

Audio/Video Recording and Transcription
The interviews will be audio and video recorded. You may ask that the recording be stopped at any time to take a break. Records will be transcribed for research. Any audio/video recordings and transcriptions will be stored securely on a password protected hard-drive.

 Subject's Initials___________

FOR THE PARTICIPANT

- I voluntarily agree to take part in this interview.
- The nature and purpose of the research in which I am involved has been explained to me in writing.
- I authorize the researcher to use the data I provide but understand that my name will be changed and other identifying details disguised.
- I understand that any recordings (both audio, video, and written) undertaken are for the purpose of transcription of data and will be stored securely.
- I understand that I may ask further questions at any time.
- I understand that I may withdraw from this research and remove permission for any data obtained from me to be used without giving a reason for withdrawing. If I wish to withdraw permission, I will contact Mr John Dyer to request this.
- I understand that research data may be used in a doctoral thesis, subsequent publications, future research, and teaching in theological and ministerial contexts and give my consent for this.
- I have received a copy of this consent form for my own records.

Participant's Name:____

Address:____

City:____ State:___________ Zip:____________

Telephone number:____

Email:____

Signature:____Date:__________

 Subject's Initials___________

Bible Engagement Survey

Instructions: Fill in your personal information (which will by made anonymous) and information on your "Bible Engagement" (which means any time you interact with Scripture)

Biographical

Name: Age: Gender: ☐ M ☐ F

Email: Years as a Christian/Active Church-goer:

Engagement Frequency

How often do you tend to get the chance to engage Scripture in some way:

☐ Daily ☐ A few times a week ☐ Once a week ☐ More rarely

In an ideal world, how often would like to engage the Bible

☐ Daily ☐ A few times a week ☐ Once a week ☐ More rarely

Bible Mediums

Please mark which mediums you use for the following forms of Bible engagement:

	Print	Phone	Tablet	Computer	Never
Long reading (20+ minutes)	☐	☐	☐	☐	☐
Shorter devotional readings	☐	☐	☐	☐	☐
In depth study (Commentaries, etc.)	☐	☐	☐	☐	☐
Memorization	☐	☐	☐	☐	☐
Meditation	☐	☐	☐	☐	☐
Lectio Divina	☐	☐	☐	☐	☐
In a prayer form	☐	☐	☐	☐	☐
Taking notes/highlighting	☐	☐	☐	☐	☐
Listening to audio Bible	☐	☐	☐	☐	☐
Findings/searching a passage or theme	☐	☐	☐	☐	☐
	Print	**Phone**	**Tablet**	**Computer**	**Never**
At home	☐	☐	☐	☐	☐
At work or at school	☐	☐	☐	☐	☐
Following along with the sermon	☐	☐	☐	☐	☐
Small group setting	☐	☐	☐	☐	☐
With children	☐	☐	☐	☐	☐

If you use Bible software or Bible apps, which ones do you use most often or prefer?

☐ Logos Bible Software ☐ YouVersion ☐ Accordance

☐ BibleGateway.com ☐ BibleWorks ☐ Other: ___________________

Reflection

Has your Bible engagement changed in any way since you purchased a device with the Bible on it like a tablet or smartphone?

Bible Reading Comprehension Comparison

Instructions: (1) Please read the epistle of Jude (the second to last book of the Bible) on the media you've brought, (2) Put the media away, (3) Answer the following questions.

Bible Medium

What did you use to read Jude?

☐ Printed Bible ☐ Phone ☐ Tablet ☐ Other

Questions

1. Jude mentions that he has a brother. What is his name?
   - ☐ James
   - ☐ Peter
   - ☐ Andrew
   - ☐ Thomas

2. Jude' says he wanted to write about "our common salvation," but instead he felt he needed to write them to urge them to:
   - ☐ clarify Old Testament teaching
   - ☐ contend for the faith
   - ☐ build the faith of those who doubt
   - ☐ excommunicate false teachers

3. Michael the archangel and the devil contended over whose body?
   - ☐ Enoch
   - ☐ Elijah
   - ☐ Moses
   - ☐ Christ

4. Please put a number next to each of the stories below indicating the order they appear in Jude:
   - ___ Enoch's prophecy
   - ___ God rescuing the Jews from Egypt
   - ___ Michael, the archangel

5. What point is Jude making by bringing up these OT stories?

6. How do you feel after reading Jude (discouraged, encouraged, confused, joyful, etc.)?

Bible Reading Plan

The Gospel of John in 10 Days

1	☐ **John 1, 2**	Sun, April 12	6	☐ **John 11, 12**	Fri, April 17
2	☐ **John 3, 4**	Mon, April 13	7	☐ **John 13, 14**	Sat, April 18
3	☐ **John 5, 6**	Tue, April 14	8	☐ **John 15, 16**	Sun, April 19
4	☐ **John 7, 9**	Wed, April 15	9	☐ **John 17, 18**	Mon, April 20
5	☐ **John 9, 10**	Thu, April 16	10	☐ **John 19, 20, 21**	Tues, April 21

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CHURCH GROUP DISCISSION
Interview Questions

Thank you all for completing the survey and participating in the reading comprehension experiment. Now, let's transition to a time of discussion about your experiences with print and digital Bibles, both today and in your regular reading times. I have about 10 or 15 questions that I hope will generate some good discussion.

Introduction

1. What have your thoughts been on the survey and the quiz?
2. Can anyone remember their very first Bible?
3. How many Bibles do you think you have in your home?
4. In the survey, you were asked how often you engage the Bible and how often you would like to? Were you answers the same, or were they different?
5. If they were different, what do you think is the main reason for the difference?

Forms of Media for Engagement

6. In the survey, you were asked about a lot of different ways of engaging the Bible. Can you talk about which ones you do and why they are important to you?
7. The survey also asked which mediums you use for different forms of engagement. Can you describe why you like one vs. the other?
8. One of the last questions was about your favorite Bible apps/websites? Can you tell us what you chose and why?
9. Since using computers/phones, do you do anything different with the Bible that you didn't used to do?
10. For example, do you find you ask different questions like "how many times is that word used?" Or Are you more likely to search for things in the Bible now vs. with just print?
11. Do you use different Bible/Christian apps to do different things?

Goals/Transformation

12. When it comes to "Bible engagement" what do you think the point of reading the Bible is?
13. What is the goal of Bible study? In other words, how does Bible engagement change a person?
14. Do you think that same thing can happen on a digital Bible?
15. Does a printed Bible feel like it's more spiritual or sacred than a phone?

Church/Community

16. Do you bring a printed Bible to church?
17. How do you feel when someone near you at church uses a phone Bible?
18. Have you ever noticed someone who uses their phone to do something other than a Bible?

Closing

19. Any final observations that you think are worth mentioning?

Rev. 01: September 2015

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