



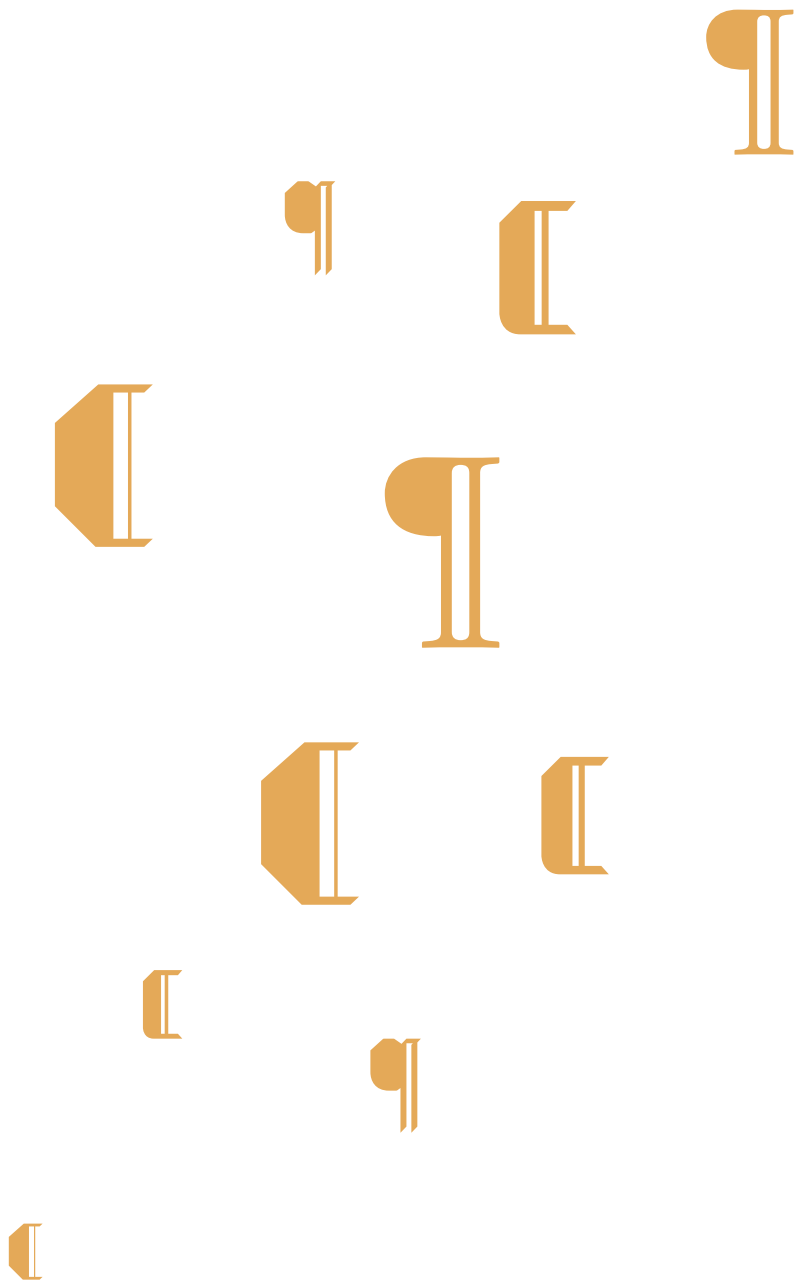
Technology and the Printed Book:

Pursuing a Holistic Human
Experience with a Sacred Text

Rachel Wugan

Master of Fine Arts Thesis

Liberty University
School of Visual & Performing Arts
Department of Studio & Digital Arts



Technology and the Printed Book:
Pursuing a Holistic Human Experience with a Sacred Text

By Rachel Dugan

Submitted in Partial Fulfillment of the Requirements for the Degree
of Master of Fine Arts in Graphic Design at Liberty University

©2018 Rachel Dugan

Professor Todd Smith

CHAIR

Professor Monique Maloney

READER

Professor Paul Reynolds

READER

Professor Todd Smith

DEPARTMENT CHAIR



Contents

| | |
|----|-----------------------------|
| 1 | Abstract |
| 3 | Chapter 1 ■ Introduction |
| 7 | Chapter 2 ■ Research |
| 31 | Chapter 3 ■ Pre-Process |
| 59 | Chapter 4 ■ Visual Solution |
| 83 | Chapter 5 ■ Conclusion |
| 85 | Bibliography |



Abstract

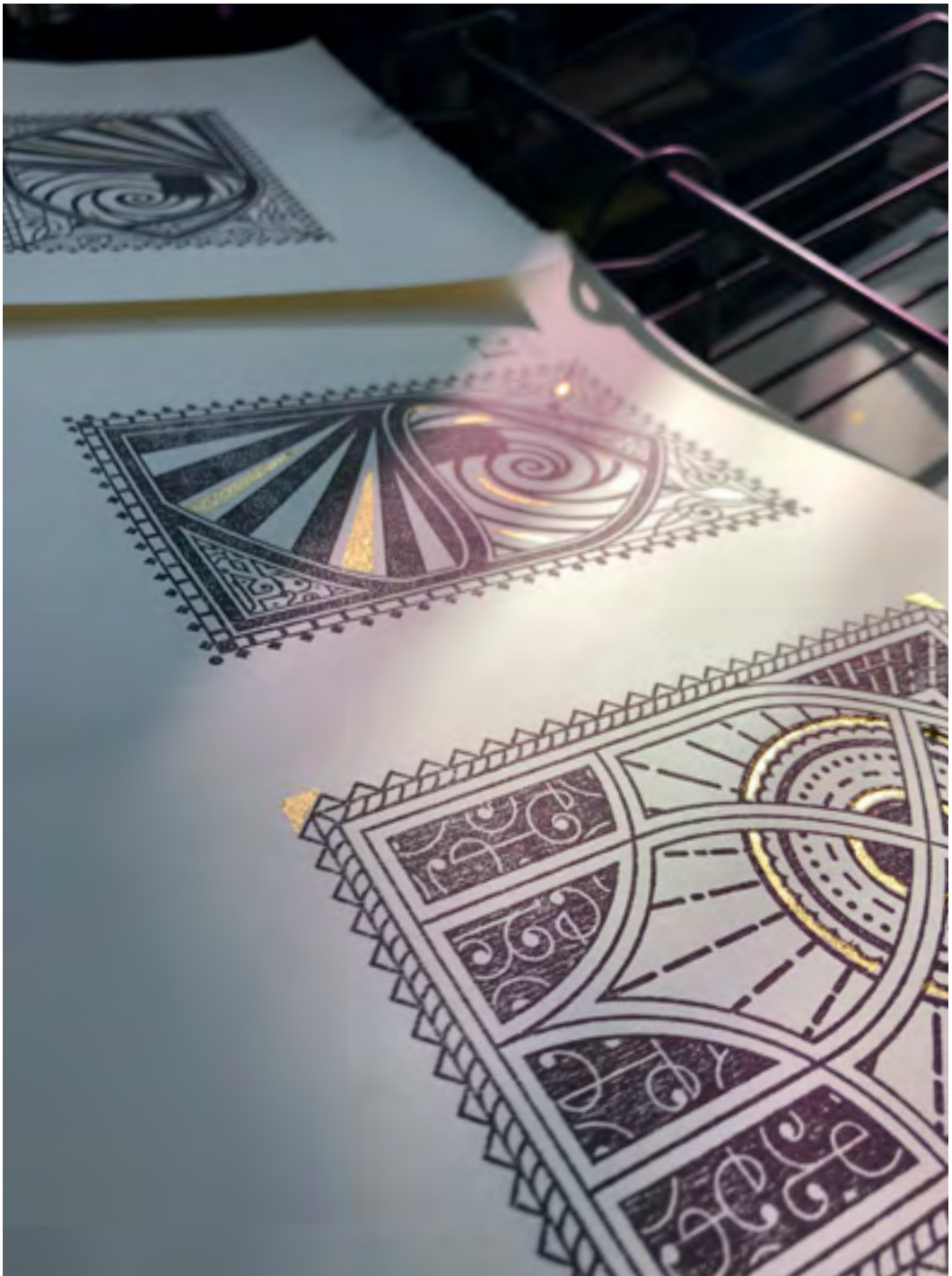
¶ There exists a sort of *gravitas* attached to a book that is printed and bound by hand that gets lost on the production line. When holding a hand-printed (or hand-written), hand-bound codex next to a mass-produced book, there is between the two a visible and tactile difference in quality and harmony between form and content. With the modern technological advancements now available, how can the craftsmanship and beauty – the *gravitas* – evident in books of the past be replicated in a way that is aesthetically pleasing, harmonious in message, and reflective of the present time?

¶ As objects, books are designed to be read with all of the senses. Reading by codex is a holistic experience that is uniquely human, an experience that makes books valuable artistic and cultural artifacts in both their contents and their form. A book is more than simply a container for the contents. The form can easily be replaced by other media types, but as a sensory experience and artistic reflection of culture, the form of the book has no replacement.

¶ Currently the codex is at risk of being replaced with electronic and entirely machine-made books that lack a human connection. This can be attributed to an economic demand for increased speed and output, a social decline in awareness of quality, and a technological decrease in craft over time. The result is that current methods and materials used in book production do not produce preservable

cultural artifacts or communicate a unified message in their physical format and textual meaning. Methods of book production must be modified to preserve the holistic experience encountered in the object of the book in ways that are appropriate to the present time. ▀





Chapter 1: Introduction

¶ The artistic journey often features meandering routes through different styles, processes, and technologies. Consistently throughout my own journey, I have found myself engaged in a conversation between the old and the new in my work.

¶ I am a graphic designer by trade but have always been drawn to the craft involved in working with my hands. In printmaking and bookbinding, I found a new and delightful avenue of artistic expression. There is such beauty in the imperfections of prints and hand-bound books, perhaps because they are relatable and the human element is so pronounced. I began experimenting with glass gilding and screen printing and woodblock carving, and this enthusiasm for old processes made me want to try to bring my technological world into the analog world. Everywhere I looked, however, there existed a distinct divide between what was appropriate to call graphic design and what was relegated to studio art, and I have always found myself sitting in the in-between.

¶ A couple of years ago I told a printmaker whom I greatly respect that I was going to try printing using laser-cut woodblocks. I watched the immediate dismissal in her eyes as she exclaimed, “Now why would you want to do that?” How could I mess with the process? I am fairly certain there was a slight

eye roll involved as well. More recently, I had a designer acquaintance ask me why I was going to all of the effort of hand printing and binding a book when I could simply send the finished file to an on-demand printer and get the “same thing faster.” I replied that it was not the “same thing”; one need only visit a rare book section of a library to understand why. I was asked by another designer why I would want to hand print everything when I could “just overlay a texture on the computer.” Because, I responded, because we *must* learn to bring humanity into our work, or we are no better than machines! I think I may have scared him some in my enthusiasm.

¶ There exists a sort of *gravitas* attached to a book that is printed and bound by hand that gets lost on the production line. When holding a hand-printed (or hand-written), hand-bound codex next to a mass-produced book there is between the two a visible and tactile difference in quality and harmony between form and content. It is the difference felt between walking into a cathedral versus walking into a warehouse. Both are places of worship, but

every person, regardless of religious leaning, gains a sense of the divine when entering a room of colored light. Warehouses simply do not have the same effect. In the same way, an intricately illuminated book of hours may be labeled a mark of human achievement, a thing of awe or remarkable grandeur, but no matter the descriptive text used, the form of the codex itself brings the mind toward something more magnificent than ourselves. This was understood in the Middle Ages but seems to have been forgotten over time. Today, the idea that form follows function is a repeatable phrase found in design and architecture schools but is rarely integrated into the design of modern books. Using a sacred text as an example, if the Bible is believed by its adherents to be the sacred Word of God, why does the current state of modern Bibles contradict the sacred nature of the contents within? Where did we lose the *gravitas* of manuscripts of old?

¶ The idea of a sacred text implies something weighty, something scarce and precious. If form follows function, then the form of the text should proclaim the same message as the sacred words therein. That does not mean that the form itself is sacred. Though I don't encourage it, one could burn or throw out a Bible, and while it would certainly be looked down upon, that action would not negate the words contained therein. They are believed to be true whether the codex exists to contain them or not. The contents are sacred, not the physical form itself. We might then agree with

Balthasar Hübsmaier's repeated assertion that "truth is immortal"; the words live beyond the form that contains them.

¶ Looking at cultures around the world, it is clear that humans desire visual expressions that draw them closer to the divine, either in reality or perceived reality. This is evidenced by gothic cathedrals with flying buttresses reaching to the heavens. It is substantiated by the fact that religious traditions almost always feature icons or sacred figures and relics, such as the sacred cow, the shroud of Turin, the virgin Mary, or the Kaaba as a part of their belief structure. It is supported by sacred texts such as the illuminated manuscripts of the Middle Ages with gilt imagery and intricate ornamentation that have withstood the test of time and are able to be preserved for future generations.

¶ As objects, books are designed to be read with all of the senses. Reading by codex is a holistic experience that is uniquely human, an experience that makes books valuable artistic and cultural artifacts in both their contents and their form. A book is more than simply a container for the contents. The form can easily be replaced by other media types, but as a sensory experience and artistic reflection of the contents within, the form of the book has no replacement.

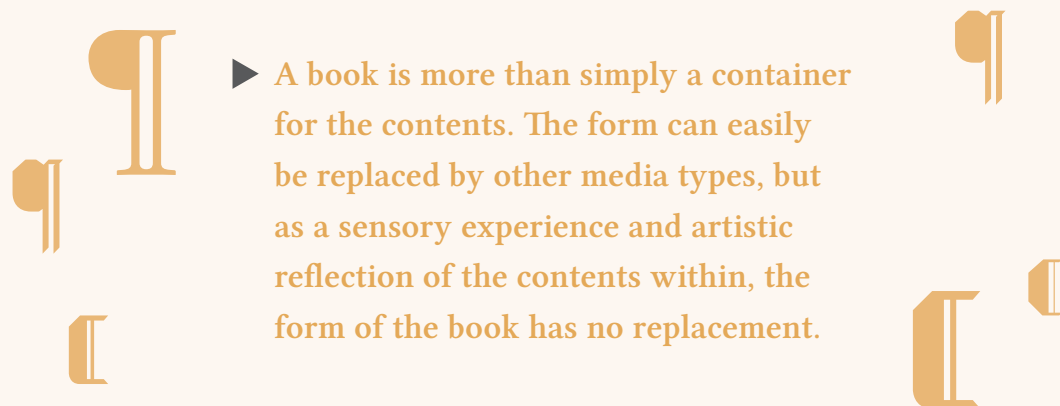
¶ Currently the codex is at risk of being replaced with electronic and entirely machine-made books that lack a human connection. This can be attributed to an economic demand

for increased speed and output, a social decline in awareness of quality, and a technological decrease in craft over time. The result is that current methods and materials used in book production do not produce preservable cultural artifacts or communicate a unified message in their physical format and textual meaning. Therefore, methods of book production must be modified to preserve the holistic experience encountered in the object of the book in ways that are appropriate to the contents and the present time.

¶ With this thesis, it is my aim to develop a solution in which current technology can be incorporated into the printmaking and bookbinding process to create a modern, holistic experience with the object of the book, specifically a sacred text.

¶ My interest in sacred texts stems from a conversation with my husband in 2014. I was reading the Bible on my iPhone, flippantly

scrolling through a passage when I realized what I had done. I was treating the Bible — a text that I believe is sacred — as any other app or e-book available on my phone. I was mindlessly scrolling. Later at home, I found my “real” mass-produced Bible and realized that I had tossed it haphazardly on a bookshelf in favor of my iPhone Bible. This generated a conversation concerning whether we have become careless with something sacred because of the form of the text. Would we toss a beautifully gilt leather-bound Bible so indiscriminately? Of course not! Has something been lost in translating text from a beautiful form to a common one? In our conversation, the word *gravitas* emerged over and over; the weight of the text — the *gravitas* — is no longer evidenced in the object itself. I think this is what has been lost, and my desire is to bring back the *gravitas* in the form of a sacred text. But first, the problem must be examined, and my theory regarding the form of the book must be substantiated by research. ■



▶ A book is more than simply a container for the contents. The form can easily be replaced by other media types, but as a sensory experience and artistic reflection of the contents within, the form of the book has no replacement.

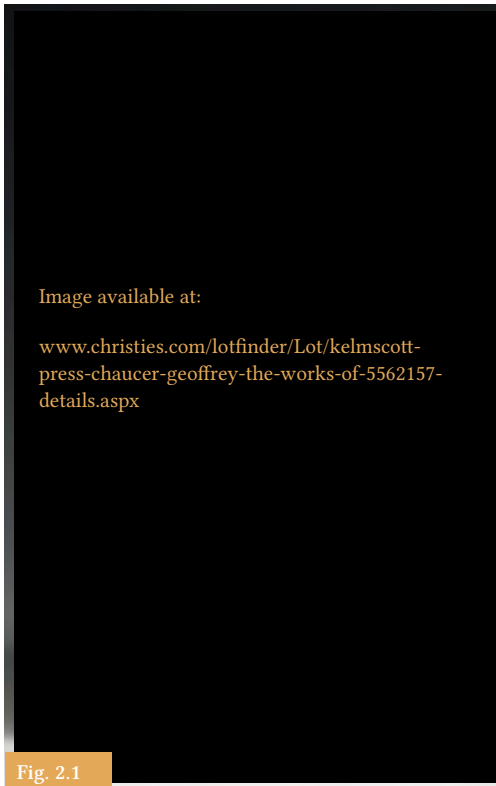


Fig. 2.1



Fig. 2.2

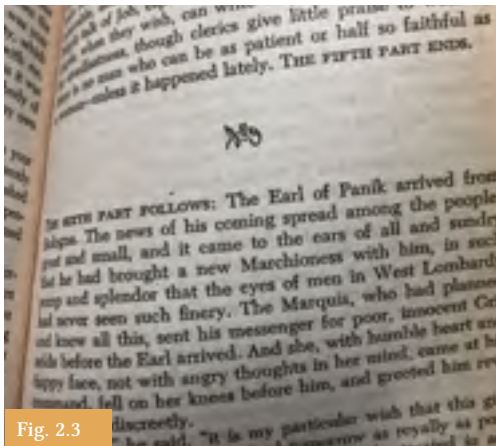


Fig. 2.3

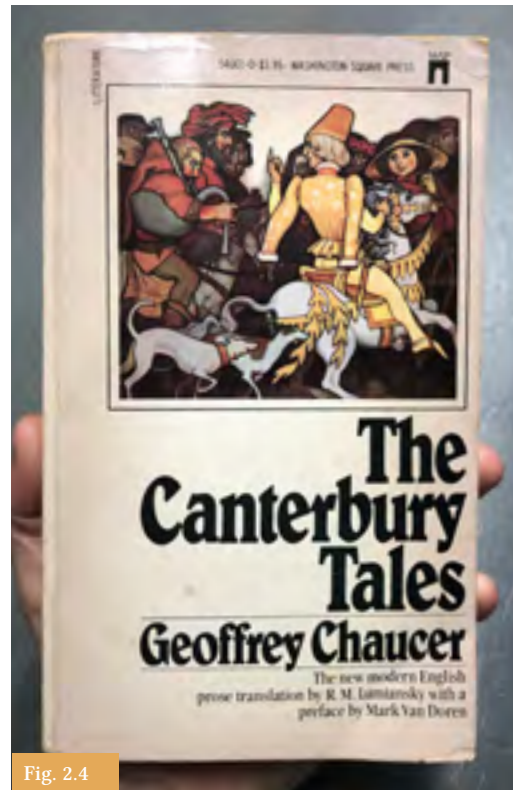


Fig. 2.4

▲ Fig. 2.1 William Morris' Kelmscott Press 1896 Chaucer ("Lot 31...")

▲ Fig. 2.3 Washington Square Press 1971 Chaucer

▲ Fig. 2.2 William Morris' Kelmscott Press 1896 Chaucer

▲ Fig. 2.4 Washington Square Press 1971 Chaucer

Chapter 2: Research

¶ The following pages take a critical look at explorations and research findings related to the object of the book. By focusing on primary and secondary scholarly sources, I will examine the following research topics:

1. Books as cultural objects: A brief historical overview to today
2. The experience and sociology of reading by codex
3. Recent experiments with modern technologies: Printmaking & Bookbinding
4. Recent experiments with sacred texts

Books as cultural objects: a brief historical overview to today

¶ The design choices that go into the making of a book: the typography, page layout, proportion, paper stock, printing method, and binding structure all work together to form a unified whole. This unified physical presentation that a reader interacts with “preconditions them, to some extent, before a word is read” (Pearson 39). To illustrate Pearson’s point, if you were to find yourself fortunate enough to be opening a copy of William Morris’ Kelmscott edition of Geoffrey Chaucer’s *The Canterbury Tales*, one of approximately 50 such copies in existence bound in white pigskin in 1896, like the one on the left below, you would have some expectations about the contents and value of the book based off of the

design and feel of the book itself. Your expectations of the contents and perhaps even the value of the literature would be different than if you were opening the Washington Square Press 1971 paperback on the right.

¶ The same book created in two different time periods for different purposes gives insight into the cultural values of the time period that they were made in. As Pearson said, “Someone opening a handsomely produced book is likely to have some innate expectations about its content, influenced by the form and design, which will be subtly different from the expectations generated by opening a cheap, unattractively produced one.

The packaging of a text at any particular point in time is a part of its (and our) history” (39). Perhaps that is why the 1971 edition is being sold for \$1.00 on AbeBooks, while the other sold at auction for \$140,500 in 2012 through Christie’s (“Lot 31...”).

¶ The form of the book gives them stories, bestows upon them a sense of humanity, and allows them to represent the historical time period in which they were made. This can lead to a better understanding of the culture that they came out of (Dimunation, Buchtel). According to Pearson, books “become part of, and testify to, the aesthetics and values of their time” (41). Bringhurst explains that the “book is a flexible mirror of the mind and the body. Its overall size and proportions, the color and texture of the paper, the sound it makes as the pages turn, and the smell of the paper, adhesive and ink, all blend with the size and form and placement of the type to reveal a little about the world in which it was made” (143).

¶ The book is a piece of art that is imbued with meaning by its very form. However, in order for books to retain their ability to exist as historical representatives of culture, they must last. Right now, there are very few books on the shelves of most bookstores that will be able to withstand the test of time. It is the sad truth of the present time that books produced five or ten years ago are falling apart, unable to be preserved, while books from the 1400s and 1500s are still very much alive (Chappell 268-269).

¶ The books of this era tell a story of a world ruled by numbers and efficiency as opposed to quality and beauty. They speak of a modern culture that values speed at the cost of longevity. They present a narrative of machine dominating craft. That narrative shift can be seen even in the covers of the Washington Square Press Chaucer compared to the Kelmscott Press Chaucer.

The books of this era tell a story of a world ruled by numbers and efficiency as opposed to quality and beauty. They speak of a modern culture that values speed at the cost of longevity. They present a narrative of machine dominating craft.

¶ Striving for efficiency and increased output is not necessarily a bad thing; advancements in technology have brought about good changes in how the world works as well. New and often beneficial ways of learning, working, buying, driving, and communicating have been developed to the point that virtually every aspect of life has been affected and changed by technological advancements. In the world of bookbinding, specifically, technology has allowed for methods that have

drastically improved the speed and efficiency of printing, binding, and finishing books. In the small and private press worlds, however, these technological advancements have often been met with either distaste or at the very least, indifference. There are a variety of reasons for that which will be discussed later, but it is interesting that the few people pushing the boundaries of technology and craft in the fields of printing and bookbinding appear to be outliers, and their methods are not being adopted quickly, if at all.

¶ In 1919, W.A. Dwiggins, via his fictitious and oft satirical Society of Calligraphers, published a piece examining why the standards of book production had so declined over the past two decades. Below is one of the earliest infographics, a chart designed by W.A. Dwiggins that expresses his thoughts on the matter.



▲ Fig. 2.5 (*The Society of Calligraphers 2*)

¶ Through made-up conversations with publishers, printers, and book salesmen, he “discovered” that several unfortunate factors were involved in the degradation of books, including lack of knowledge of the trade among the whole of society, the public’s lack of good taste, lack of good printers, and essentially a lack of set standards in the field. The fact that this was published in the midst of the Arts & Crafts movement shows that the overall effects of Morris and his peers did not reach into the entirety of the book design field. And although he is not directly associated to the movement, W.A. Dwiggins was also calling for a return to craft. On page 16, a “Mr. G” explains that the “only cure is to get back to decent standards of workmanship in everything again. But the case seems to me to be hopeless. I try to do printing up to a decent standard—and that is about all any of us can do. I don’t believe you can hope to do much good through your societies and investigations. I believe in each one doing his own job in the best way he knows how. That’s the only way you can raise the standard. It’s the work you turn out that counts.” (16)

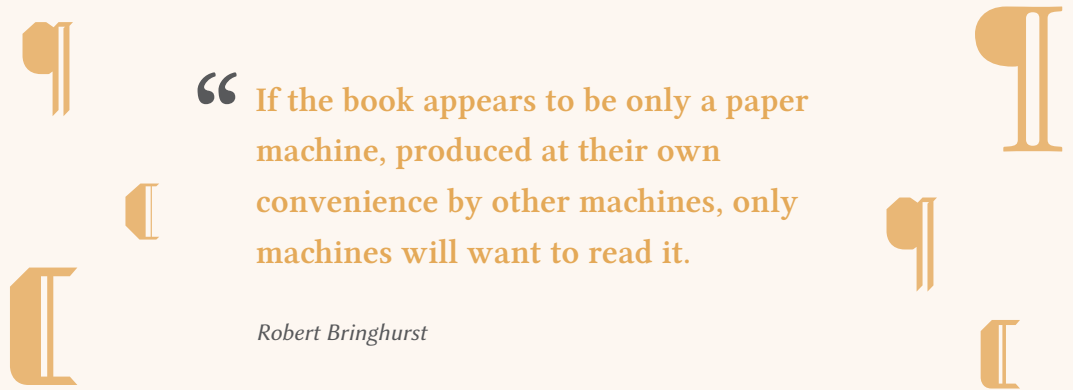
¶ Since the state of the book in the current century is so dismal, perhaps it is time for a change. Morris, Dwiggins, and Chappell were also disappointed in the current state of the book during their time period; this is not a new conundrum. However, at the moment, there is not a lot, if any, middle ground. It seems that within the options for book production, either

a publisher uses mass-production methods for publisher or trade bindings and printing or a small or private press uses historical methods for fine bindings and printing. This leads to the former producing books that do not last and the latter producing books that are not time- or cost-effective. Warren Chappell foresaw this, saying that if “all modernity can do is produce more printing more rapidly, then modernity has lessened, not increased, the power of print in the realm of the mind and spirit—even while multiplying its power as a bureaucratic or administrative force” (274). Bringhurst also protested against the current state of affairs, saying that if the book “appears to be only a paper machine, produced at their own convenience by other machines, only machines will want to read it” (143).

¶ Upon the introduction of the printed book, it was supposedly remarked that “[t]he printed book will destroy the building,” which was a reference to the fact that the printed

word would destroy the building’s ability to tell stories in its design (Eisenstein 35). Bringing that into the language and cultural landscape of today, this could translate to: technology will destroy the printed book. In other words, technology will destroy the book’s ability to be a cultural narrative in its form. Much like churches of today are constructed to be efficient (if constructed at all) rather than to tell stories in their architecture, technology has allowed us to construct books that are efficient rather than cultural artifacts that tell stories in their form. And they are being destroyed.

¶ Modern books cannot be kept alive because of the temporality of the materials used. The paper is acidic and is crumbling after less than a decade; the glue used in perfect binding, while cost effective and a completely machined process, is breaking down, and the pages are falling out (Chappell). The machines used to produce books quickly lack a human element



and are unable to make a permanent impression upon a page, so they do not communicate a unified message. Morris deplored, “A book, printed or written, has a tendency to be a beautiful object, and that we of this age should

generally produce ugly books, shows, I fear, something like malice prepense—a determination to put our eyes in our pockets wherever we can” (1).

The experience and sociology of reading by codex

¶ As an artifact, the book is able to be read and understood using all of the senses. However, most people today have “never touched nor even seen a book made by hand from handmade materials. That means most readers have never encountered a book made to be read with the whole sensorium” (Chappell 292). To read a book with all of the senses may seem foreign, but readers constantly develop thoughts and expectations of the meaning of a book based off of how the contents of books are physically presented; it is almost impossible to read a book objectively without forming *some* opinion of the contents based off of the design (Eisenstein 64). Again, the two Chaucer books shown previously are proof of this. The field that studies the correlation of material form to meaning is known as sociology. David Pearson explains:

“Books have, in their three-dimensional formats, physical characteristics which have both affected the ways in which their contents have been received, and been exploited for their artifactual potential. The pioneering thinking of the late

twentieth-century bibliographer Don McKenzie on what he came to call the sociology of texts — how the material form in which texts are transmitted influences their meaning — has focused the attention of many contemporary scholars onto the importance of the whole book, and not just the words on the page.” (22)

¶ Filipe Carreira da Silva aligns with a pragmatic approach to the sociology of the book, explaining that “meaning is produced in a process of mutual constitution between people and the world around them, including physical objects” (2). Books *are* judged by their covers, typography, and layouts, making every single part of the physical design of the book an important consideration because “the form of things has meaning and does matter” (Chappell 42). In order to determine appropriate formats for a book made in the present time, I next conducted a sociological examination of the elements that make up the book, focusing on typography, page layout, proportion, paper stock, printing method, and binding structure and their influence on the senses of the reader.

¶ Typefaces will either sit in harmony with or contradict the contents of the book, but whichever is chosen will play an important role in crafting the experience of reading the text. Bringhurst states that typography “exists to honor content[,]” and the moment that “a text and typeface are chosen, two streams of thought, two rhythmical streams, two sets of habits, or if you like, two personalities, intersect. They need not live together contentedly forever, but they must not as a rule collide” (17, 22). Selecting a typeface that is appropriate to the content is vital because letters “mean what they are as well as what they say. ... When the type is poorly chosen, what the words say linguistically and what the letters imply visually are disharmonious, dishonest, out of tune” (Bringhurst 23).

¶ To visually exemplify this, Beatrice Ward says to “[s]et a page in Fournier against another in Caslon and another in Plantin, and it is as if you heard three different people delivering the same discourse—each with impeccable pronunciation and clarity, yet each through the medium of a different personality” (qtd. in Brumberger 208). On page 35 of *Books as History*, Pearson showcases a superb visual example of typographic choices affecting meaning by placing three versions of Shakespeare’s *Sonnet 106* side-by-side. The differences in type choice change the feeling and expectation of the text, as can be seen to the right.

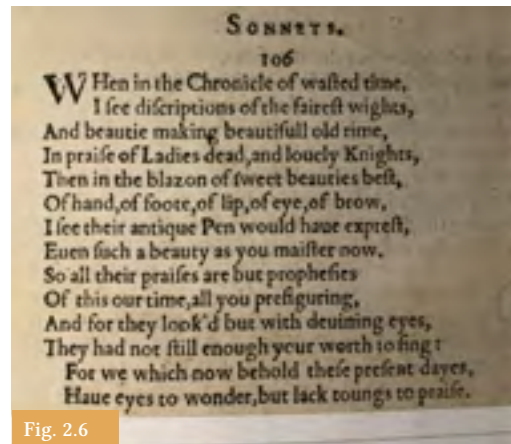


Fig. 2.6

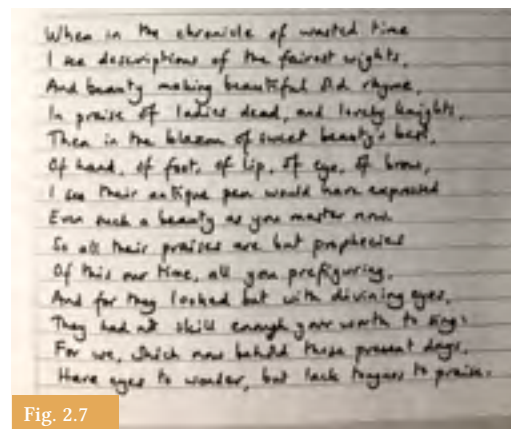


Fig. 2.7

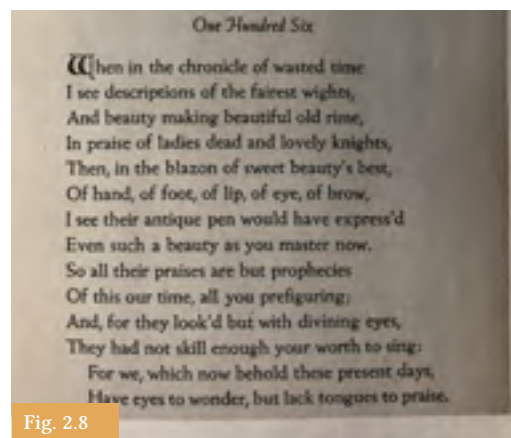
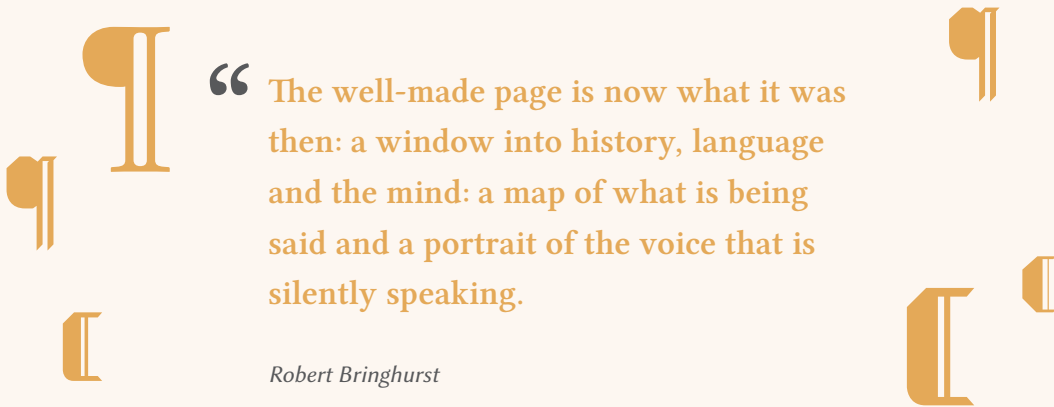


Fig. 2.8

▲ Fig. 2.6-2.8 (Pearson 35)



“ The well-made page is now what it was then: a window into history, language and the mind: a map of what is being said and a portrait of the voice that is silently speaking.

Robert Bringhurst

Sociology: page layout

¶ The designer who creates the layout of the page is framing the world for the reader. In this way, the layout of a page also informs the reader’s expectations. A book with generous margins may entice the reader to take notes in the space provided or to appreciate the book as a high-end and expensive product, depending upon the time in which it was produced. This is because “[t]he well-made page is now what it was then: a window into history, language and the mind: a map of what is being said and a portrait of the voice that is silently speaking” (Bringhurst 120-121). Walter Ong explains that “[b]ecause visual surface had become charged with imposed meaning[,] and because print controlled not only what words were put down to form a text but also the exact situation of the words on the page and their spacial relationship to one another, the space itself on a printed sheet—‘white space’ as it is

called—took on high significance that leads directly into the modern and post-modern world” (125). The layout of the book can frame the identity of a book’s subject, intended use, and cultural tradition.

¶ For example, page layouts in medieval books can be used to identify whether a text is literary or theological in subject. Two-column page layouts were used almost exclusively for Bibles and theological texts. Because the layout itself was used consistently, readers formed presuppositions so that anyone who opened a book with a two-column layout had the expectation that it would be of a theological nature (Dimunation, Buchtel).

¶ As another example, in Laurence Sterne’s *Tristram Shandy*, he used “typographic space with calculated whimsy, included in his book

blank pages, to indicate his unwillingness to treat a subject and to invite the reader to fill in. Space here is the equivalent of silence” (Ong 126).

¶ Often, poetry is set in order to allow type to speak through its visual construction: “George Herbert exploits typographic space to provide meaning in his ‘Easter Wings’ and ‘The Altar’, where the lines, of varying lengths, give the poems a visualized shape suggesting wings and an altar respectively” (Ong 126). The visual shape of the type on the page, or, as in Sterne’s case, the blankness of the page, reinforces the meaning of the text.

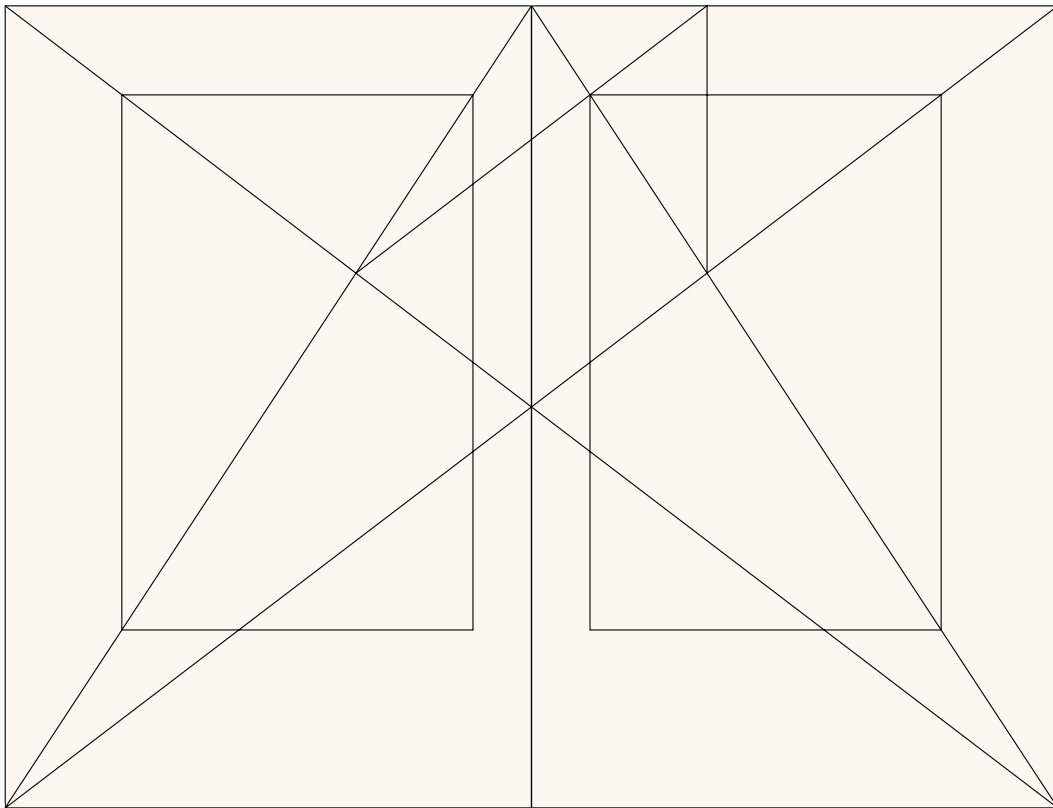
¶ Historically, rules for setting the page layout were dictated by the idea that the book is composed of two pages acting as a whole. This brings unity to the form of the book as each spread is encountered. Morris explains that “[l]astly, and by no means least, comes the position of the printed matter on the page. This should always leave the inner margin the narrowest, the top somewhat wider, the outside (fore-edge) wider still, and the bottom widest of all. This rule is never departed from in medieval books, written or printed” (4). This framing allows the form to be conducive to human interaction and is derived from the Golden Ratio.

Sociology: proportion

¶ Today, the size of the book and the spacing of the margins are often determined by the sheet size of the paper. While this is cost effective, it does not always constitute an aesthetically pleasing book proportionally. Jan Tschichold had much to say regarding page proportion. He explained that “[w]e do not know why, but we can demonstrate that a human being finds planes of definite and intentional proportions more pleasant or more beautiful than those of accidental proportions. An ugly format causes an ugly book” (*The form of the book* 38). Early manuscripts rarely deviated from either the Golden Section, 2:3, or 1:√3 in their ratio (Tschichold, *The form of the book* 28).

¶ Within early manuscripts the Golden Section, or divine proportion, was employed for other reasons as well. The text in the center of the page was considered sacred, and the text in the margins was considered profane (Buchtel). Commentaries were often placed in the margins surrounding the text, in the profane areas, whereas the biblical text was placed in the sacred center. In this way, the very proportions of the page pointed to the sacred nature of the text.

¶ These pleasant proportions were transferred from manuscripts to print but have for the most part been abandoned in modern times. This unfortunate state of affairs was



▲ *Fig. 2.9 Method of deriving the divine proportion of a page, where the middle rectangles are considered sacred space. Note how the entire spread is considered as opposed to the individual pages.*

echoed by Edward Johnson, who wrote that “Early Printing was in some points inferior in technical excellence to the best modern typography. But the best early printers used finer founts of type and better proportions in the arrangement and spacing of their printed pages; and it is now generally agreed that

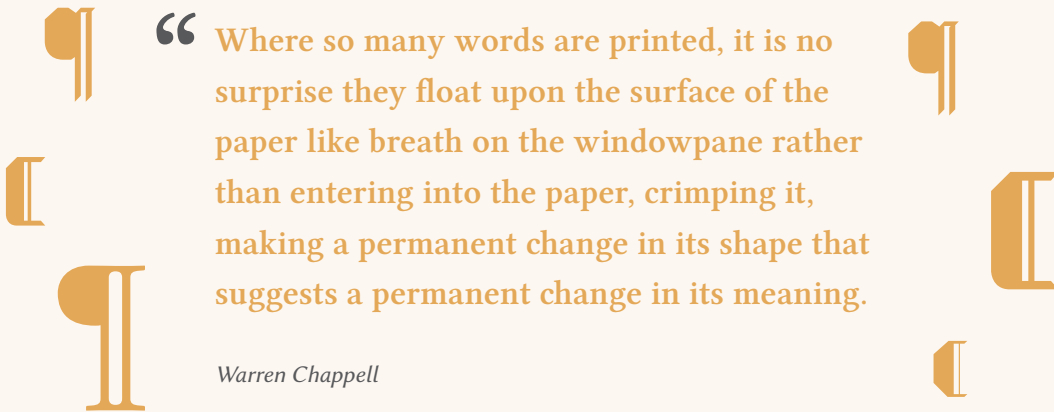
early printed books are the most beautiful” (Johnson 333). A return to medieval proportions, whether 2:3, $1:\sqrt{3}$, or the Golden Section, would improve upon the harmony of the book size in relation to the book contents and layout and would allow the book to visually and verbally present a unified message.

¶ Mark Dimunation explains that available “materials determine the method of transmission” (Buchtel). This is true historically when looking at the development of paper. Papyrus was developed in ancient Egypt. Reed plants growing throughout the Nile region were woven together and beaten to form long scrolls upon which information was able to be recorded. The reed plants were abundant in the region and therefore determined the form of the recorded text until parchment was developed. Parchment came from Pergamum, where the story goes that a goatherd was attempting to make drums and accidentally scraped it too thin. In doing so, he invented parchment. The words parchment and vellum are often used interchangeably, but it is important to note that while all vellum is parchment, not all parchment is vellum. Vellum is specifically made from calf skin, where parchment may be made from any animal skin.

¶ Papermaking developed in the ancient world around the first century in China. Tsai Lun discovered that he could take macerated plant fiber and suspend it in a vat of water. Then a screen could be used to collect the fibers and when dried it would form a sheet. This process was limited to the far east for centuries. It was not until about the 6th or 7th century when the process was taken across central Asia, and even later – the 11th or 12th century – when it finally arrived in Europe. The advantages of using paper over parchment were plentiful,

but the major advantage was cost. Paper is the most expensive part of a book, so being able to produce a plant-based instead of animal-based paper allowed for a much cheaper product. Until the industrial revolution paper was made using approximately the same method with few advances. With the industrial revolution paper was able to be made in much larger sheets and even continuous rolls. Around the 1860s, bleach was added to the process of papermaking. The major advantage of bleach was that it allowed additional sources to be used that are not naturally white, such as wood pulp and cotton. Wood contains acid and other chemicals that are not good for the book, leading to the production of acidic paper. This means that books produced after the late nineteenth century not only destroy themselves over time, but they destroy other books as well because they will off-gas onto any surrounding books (Buchtel). It is important that acid-free paper is chosen, or the book will not last.

¶ The tactile quality of the chosen paper will also affect the print quality of the chosen type. Bringhurst examines this in further detail in *The Elements of Typographic Style*, concluding that it is best to “[c]hoose faces that suit the paper you intend to print on, or paper that suits the faces you wish to use” (94). Certain typefaces were built to be more successful when printed on particular paper styles. Type with very fine lines will not print as well on



“Where so many words are printed, it is no surprise they float upon the surface of the paper like breath on the windowpane rather than entering into the paper, crimping it, making a permanent change in its shape that suggests a permanent change in its meaning.”

Warren Chappell

heavily textured papers, and type with heavier and more consistent line weights will not print as well on smooth papers. In order to achieve a unity of message through paper and type, the paper selected must be compatible with the typography employed, or vice versa.

¶ Tschichold supported the sentiment that you can “consider the relationship between

thickness and flexibility, the character of the font used, the mood of the book, and then specify paper texture, hue and weight so as to achieve perfect harmony among all parts” (*The form of the book* 171). Again, harmony and unity are the goal. If a book is to present a cohesive message, the total form must be cohesive and work together.

Sociology: printing method

¶ Different methods of printing lend different sculptural and emotional results. For example, letterpress is a relief process that creates a sculptural page — the ink physically presses the image into the page. Engraving is an intaglio process that creates a sculptural page — the paper is forced up into the engraved image, physically raising the paper in places where the ink is on the page. The impression of type on paper gives an air of permanence and authority to the word.

¶ Today, however, most printing is done either on coated papers where ink sits on top of the paper or on uncoated papers where the ink soaks into the paper. Neither of these processes physically alter the page. Chappell lamented that today, “[w]here so many words are printed, it is no surprise they float upon the surface of the paper like breath on the windowpane rather than entering into the paper, crimping it, making a permanent change in its shape that suggests a permanent

change in its meaning” (276). He goes on to say that the “books and other documents that pour from the world’s laser printers and presses look astonishingly bland. One reason is ... that all these documents are *flat*. They lack the *clawmark of meaning*, which the letterpress, in skillful hands, so readily provides” (285). The blandness of machined printer output could also be ascribed to “the uniform perfection of machined goods” which issue “no sympathetic invitation, no personal response” (Sennett 1181). Printing by hand allows for a dialogue between the printer and the materials, a conversation that makes the product undeniably human.

¶ John Baskerville did not find this dimensionality to be desirable, to the point that he

“printed his sheets by letterpress — since he had no other method — but then had them ironed like laundry to remove the sculptural tinge.” While Baskerville tried his best to remove the *clawmarks of meaning* that Chappell was referring to, his work was not left meaningless like so much of the work that Chappell detailed. That is because while the pages were in fact ironed, the human irregularities typical of letterpress printing would not have been removed. They were still printed by flawed humans, not by a machine that can perfectly reproduce a page over and over again. If a book is to be read with all of the senses, the tactile nature of the printed word on the page must be considered in the design of the book.

Sociology: binding structure

¶ Warren Chappell wrote that “the form of things has meaning and does matter” (42). If this is the case, then the attribute that gives the book its form, the binding itself, has meaning and matters as well. The binding’s “aesthetics cause the book to become an experience for the viewer. The bindings encourage the viewer to interact with the book, to touch it and turn the pages, and the direct visual and tactile experience with the binding structures, materials, and content make the pieces more approachable” (Aly 32-33). A book’s binding is the first chance a reader has to develop an expectation of the text.

¶ Binding structures have changed and evolved throughout history; as John Buchtel noted, “Binding follows cultural styles.” It is also influenced by available technology. De Hamel explains that “[t]here is a major contribution to modern civilization which

A book’s binding is the first chance a reader has to develop an expectation of the text.

was probably made by the Bible. This is the adoption of the codex as a book format, a shape that is with us still.” (48). The codex allowed an ease of use; instead of having to unroll a document all the way in order to read it, one could simply flip the page. The codex also allowed for writing on both sides of the page. The exact structure of codices has changed and adapted geographically and over time. For example, medieval bindings featured a cohesive, laced-in structure with the book block permanently connected to the boards. Later, case bindings developed in which the binding (case) was separate from the book block itself. These case-bound structures are not as structurally sound and may detach from the text with time.

¶ Until the industrial revolution and the introduction of publisher (edition) bindings, the binding and finishing were not always done as a part of the same process of printing the book like they are today. The printer would print the book and it would go to a binder where three or four price points would be decided upon. It was sold at these price points so that the customer could choose the style of binding they wished to purchase or could afford. It would then be sent to a finisher where the decoration, known as tooling, would be done mostly one-off for individuals (Buchtel). Much of the time, the binding took place at this time as well instead of right after printing. These factors are why books made before mass production and the industrial revolution

cannot necessarily be identified by their covers. Not only was the same edition bound in different materials, but the finishing was almost never the same. Now with the advent of technology, books are manufactured in large editions where variances in individual copies are considered errata, or book flaws. What was once celebrated as unique and one-of-a-kind has become standardized and machinated.

¶ In a similar fashion, the cultural values of a time period can be seen in the attention that different types of books were given in their bindings. David Pearson gave the example that a “seventeenth-century devotional text is much more likely to be found in a fine binding of its period than a literary one, in line with the values of the time” (175). What a society values it treats with more respect, more *gravitas*. In books, this can be evidenced by their binding. Looking back at the earlier examples of Chaucer’s *Canterbury Tales*, which binding shows that the text is valued? Do either of these bindings contradict the idea that the text is respected? It would be fair to say that the Kelmscott white pigskin binding, an archival and expensive material, reinforces the idea that the text inside is valuable while the Washington Square Press perfect-bound paperback, which uses cheap and degradable materials, contradicts that idea.

Recent experiments with modern technologies: printmaking and bookbinding –

¶ As technology has improved, methods of book printing and production moved from printing via letterpress and binding individual books one at a time to more efficient and cost-effective methods. The industrial revolution sparked the introduction of machined books. The paperback book was developed, printed by machine, covered in a thick stock, and bound together using glue. This type of book does not even need to be sewn! The advantages of printing this way are numerous, including the fact that now any person of any socioeconomic background can easily afford books.

¶ Today, print-on-demand book publishers exist where books can be digitally printed in quantities as low as one or two. This allows authors all over the world who want to publish books the ability to write and hit print and receive an actual book instead of being forced to have their manuscript accepted and edited by a publishing house. The rise of the electronic book, or e-book, has had amazing implications for the act of reading itself. Being able to download a book and read it on a phone or tablet has allowed for a completely new method of transmission and a different experience with text. No longer is the library strictly a building; it can be a cloud, a stream of data accessible to anyone. E-books are often cheaper than codices, have advantages such as keyword searching and highlighting, and allow an entire library to be

carried in the palm of the hand. Technology is an amazing equalizer.

¶ However, there are also disadvantages to the form of the book becoming so dependent on technology. As previously discussed, the quality of materials and binding methods used often mean that books cannot last as historical artifacts. Print-on-demand books are often unedited, extraordinarily cheap, use low-quality materials, and may be perceived as untrustworthy – and sometimes rightfully so. E-books are wonderful and have their place, but since they do not have an actual dimensional form, they lack the very materiality necessary to be a holistic sensory experience. To clarify, this does not mean there is no experience to be had with an e-book but that the book as an object provides a holistic sensory experience because of its material existence that by its very nature the e-book cannot replicate.

¶ As related to the field of book production, technology has allowed for advances primarily in the mass-production market. Small and private presses have, almost exclusively, not allowed technology to modify their historical production methods. To produce limited runs of high-quality books, these presses rely on high-end clientele and time-trusted methods of production. The results are absolutely beautiful objects that will undoubtedly

withstand the test of time as historical and cultural artifacts. However, there are very few, if any, small or private presses that are producing books using historical techniques that are *also* making use of modern technology. It seems to be an either-or market when it comes to book production: either low-quality production by machine using modern technology *or* high-quality production by craftsmen using historical techniques.

¶ It is the point of this thesis to explore that middle ground. In modern times, where can the two overlap or be modified to preserve the uniquely human experience encountered in the object of the printed book? As far back as 1957, Lewis Kitcat argued that he was “all in favour of experimenting with new methods and for streamlining production” but that this “ingenuity must not only be directed towards economy but also to achieving quality at the same time.” Further, he said that there are “certain standards below which it is not wise to go, because ‘cheap and nasty’ is a very insecure market. Of course, without trying things out no progress would be made, but I do urge that bookbinding should not be allowed to verge on the shoddy even in the cheapest of cased books” (259). Tschichold agreed, asserting that “[r]evolutions are not expected

It seems to be an either-or market when it comes to book production: either low-quality production by machine using modern technology *or* high-quality production by craftsmen using historical techniques.

in the various parts of book production, but rather constant modifications. ... Those who are striving for better results should not forget that the little we can do should be done as well as possible” (“Something about Book Design” 79).

¶ Looking at the field of printing only and not printing for book production, there are a number of artists beginning to experiment with technology. Paul Coldwell is a proponent of this exploration, saying that “the computer has enabled us not only to think new thoughts and challenge how we print but also to revisit previous technologies to form hybrids. The contemporary printmaker has a beguiling range of possibilities at their disposal” (176).

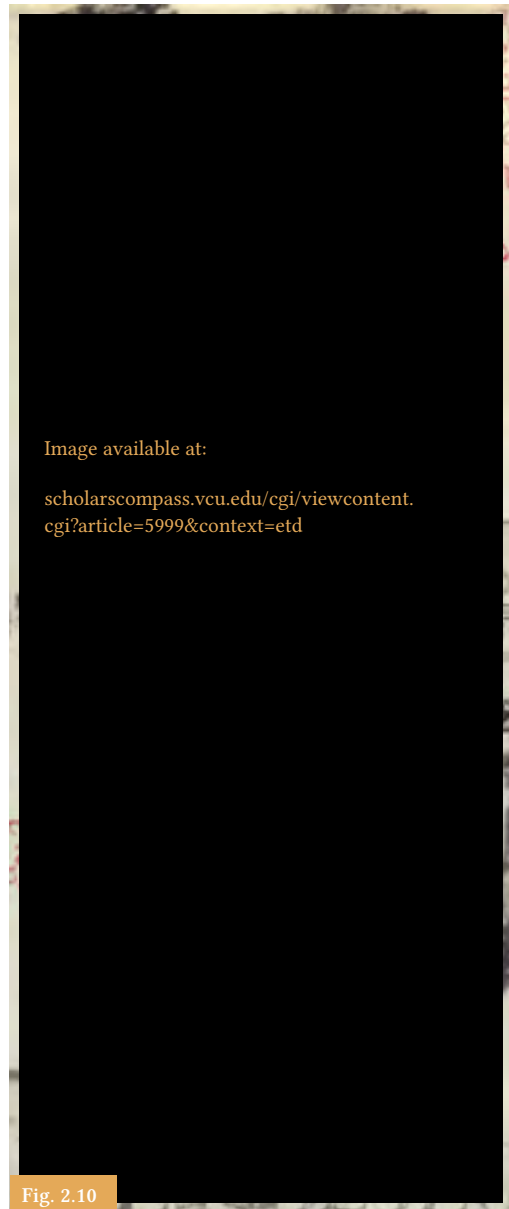
Examples

¶ Caroline Kierulf is an artist who has experimented with laser-cut woodblocks in order

to convey meaning in her prints. She asks the question, “Can the old ‘out-of-date’ printing

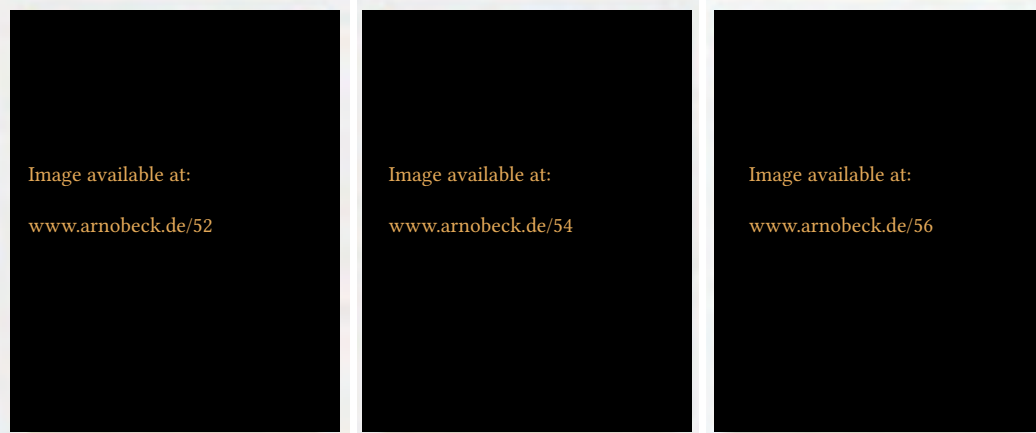
technologies today represent something beyond the purely functional and have qualities that are not just about nostalgia, but which may also be critical and productive of alternative futures (economic, political, etc.)” (Kierulf 179)? Her goal was to produce something that is relevant and culturally meaningful today, even though the process that she was using is, as she called it, “out-of-date.” She highlights the philosophical idea of entering into a conversation with technology and materials in a process that allows the artist time to reflect on culture. Printing by hand allows the artist to be a part of the process, to do something more than hit print and retrieve. It allows the artist to create, and that process becomes a conversation with the press, with the ink, with the product.

¶ Jamie Mahoney, a professor of graphic design at Virginia Commonwealth University, wrote her thesis as an examination of the issues that have developed due to the isolation of graphic design from studio art. She used etching as the printing method to solve her problem. Mahoney has watched her students and designers over the years, lamenting that “[f]or most young designers the computer has completely replaced the hand in every stage of the design process. I’ve noticed in many cases designers aren’t problem solving outside of the computer. It isn’t even considered,” but “when you choose the computer, you exclude the physical connection of the hand to the object you’re creating.” (8, 17) She argues that both



▲ Fig. 2.10 (Mahoney 23)

the speed of technology and the craft of the artist’s hand can be used in balance with each other to lead to new and unexpected methods.



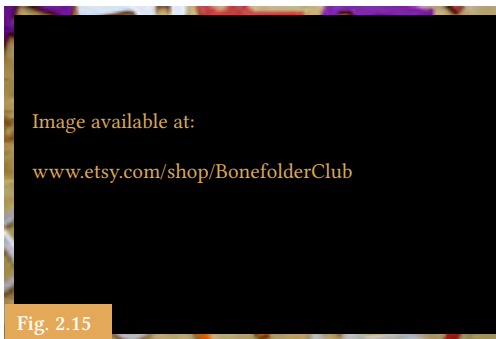
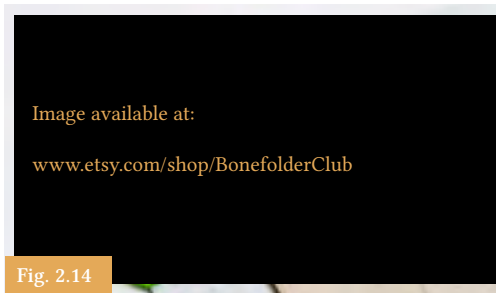
▲ *Fig. 2.11-13* Woodblock prints on Japanese paper: “colorpicker,” “flip_horizontal,” and “flatten image.” (Arno Beck)

Her thesis demonstrates one way that a historical process (etching) and modern technology (computer) can be used together to introduce a new method of printmaking.

¶ Paul Coldwell documented several artists who are currently exploring the merging of technology and historical techniques. He selected them because of “the appropriateness of their means of expression to their intentions” (Coldwell 176). One of these artists, Christine Baumgartner, takes computer generated images, such as heavily manipulated video stills, traces them onto large woodblocks, and creates amazingly intricate hand-carved woodcuts from these digital images. Coldwell writes that “by returning to a technology that was used even before the advent of the printing press, the hand printed woodcut, [Baumbgartner] is able to reinvent

the process and put it at the service of a very contemporary interrogation of anxiety and perception in a digital age.” (178)

¶ Arno Beck is a German artist who experiments with the “interplay between the virtual computer world and traditional, artistic techniques” (Beck). He creates works that appear to be digitally produced but are actually created in a historical method. For example, he uses square blocks of wood and 32 colors to print what he calls “post-digital painting,” pieces that appear to be 8-bit but are in fact woodblock prints. His website explains that his “prints combine the specific aesthetic of woodprint with digital subjectmatter - particularly the organic materiality and haptic of wood in contrast to the clean perfection of the digital” (Beck). Commenting on the analog process, he said that it “humanizes technology and therefore enlivens the screenworld - the error is part of the beauty” (Beck).



▲ Fig. 2.14-15 3D-printed bookbinding tools (BonefolderClub)

Recent experiments with sacred texts

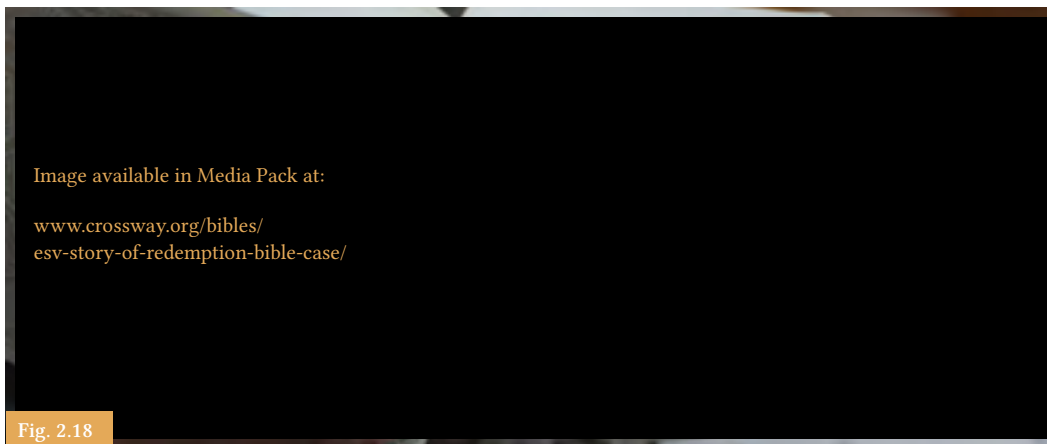
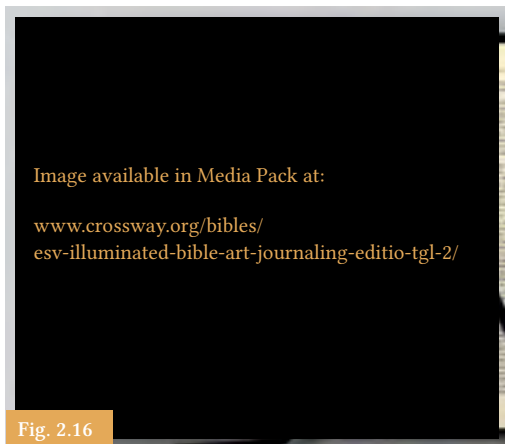
¶ In the realm of sacred texts, there have been several recent developments that have attempted to bring back some of the *gravitas* of old manuscripts in different ways. First, and on the more recent side, Dana Tanamachi was commissioned by Crossway to illustrate an entire ESV version of the Bible. The edition’s website states that Crossway believes that

“the Word of God is a treasure to be read, memorized, internalized, and shared. The *ESV Illuminated Bible, Art Journaling Edition* was created to continue in this historic tradition of illuminated manuscripts. Our prayer is that the added ornamentation and

¶ There are few bookbinders who use modern technology in their actual products. Most would be considered artist books if the technology creates a more modern object. In bookbinding tools and equipment, however, there are some technological advancements being made. For example, Setpan Chizhov of the Netherlands runs an Etsy shop called “BonefolderClub” where he sells 3D-printed bookbinding equipment, such as corner cutting tools, spine rounding guides, and enclosures for brick weights. These inexpensive parts may be printed on demand as needed and used as inexpensive alternatives to their brass counterparts. With almost 350 sales as of late 2018, it looks as though Chizhov may have found a great way to integrate technology into the bookbinding process.

illustrations will draw the reader’s eyes to the beauty of the Word of God itself, stirring up affection for the Creator and inviting deep reflection on the narrative and truths of Scripture.”

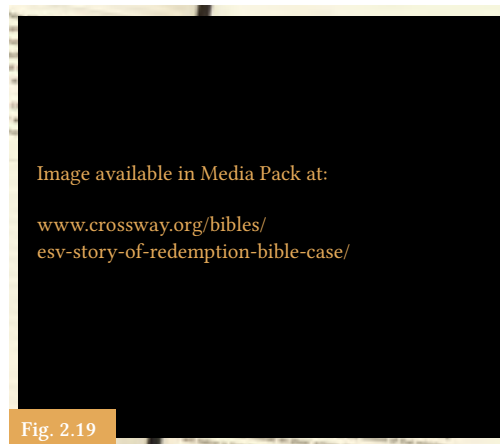
¶ This book was printed on a “thick, cream-colored paper” using 2 colors, one of which is gold (*ESV Illuminated Bible, Art Journaling Edition*). It is a modern interpretation of an illuminated manuscript and is quite impressive. It is definitely targeted toward a female demographic, as it is a Journaling Edition, and all of the illustrations lean feminine.



▲ **Fig. 2.16-17** Dana Tanamachi's Crossway edition (*ESV Illuminated Bible, Art Journaling Edition*)

► **Fig. 2.18-19** Peter Voth's Crossway edition (*ESV Story of Redemption Bible*)

¶ Crossway also recently published the *Story of Redemption Bible*, which Peter Voth was commissioned to illustrate. These two ESV Bibles demonstrate a wonderful first step toward publishers beginning to see the value of aesthetics and quality in the production

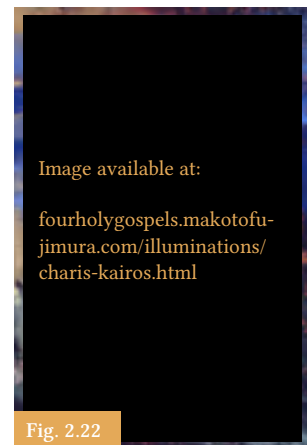
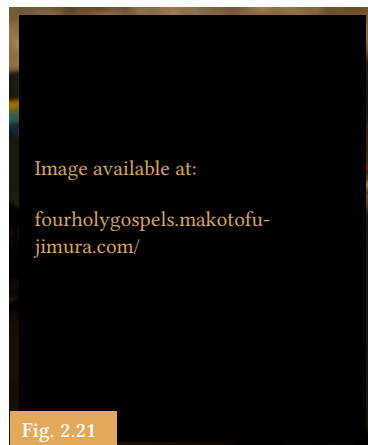
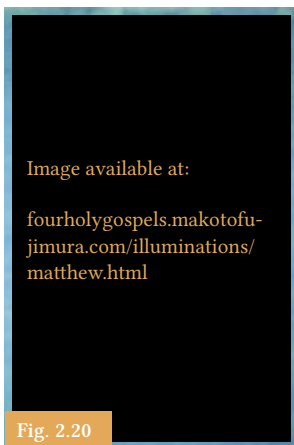


of Bibles, even going so far as to commission well-respected artists to visually portray the Word of God. The only potential downside to these Bibles is that they do not detail the type of paper they are printed on other than to say it is a “premium cream-colored paper” (*ESV Story of Redemption Bible*). If it is a mass-produced text, chances are that it is printed on acidic paper and will not last.

¶ To commemorate the 400th anniversary of the King James Bible, Crossway commissioned Makoto Fujimura to create the *Four Holy Gospels*, a modern illuminated manuscript released in January 2011. This edition of the Gospels included a “leather-bound English Standard Version of the Bible, printed with a six-color metallic process. ... Five major new

works...will be the volume’s main images, making this the first such manuscript to feature abstract contemporary art in lieu of traditional representational illustrations” (Fujimura). This edition is beautifully done and features a two-column layout which harkens back to medieval theological books.

¶ Not too long ago, Adam Lewis Green introduced the world to *Bibliotheca* via his legendary Kickstarter campaign. He designed his own typeface, revised (with help) the American Standard Version to become what is known as the American Literary Version, set the entire Bible into five volumes, contained in a beautiful walnut slipcase, and seemingly took the religious world by storm. This set is absolutely stunning, and he did his homework



- ▲ **Fig. 2.20** “Matthew” as featured in the *Four Holy Gospels* (Fujimura)
- ▲ **Fig. 2.21** Slipcase illustration (Fujimura)
- ▲ **Fig. 2.22** “Charis-Kairos” or “The Tears of Christ” as featured in the *Four Holy Gospels* (Fujimura)

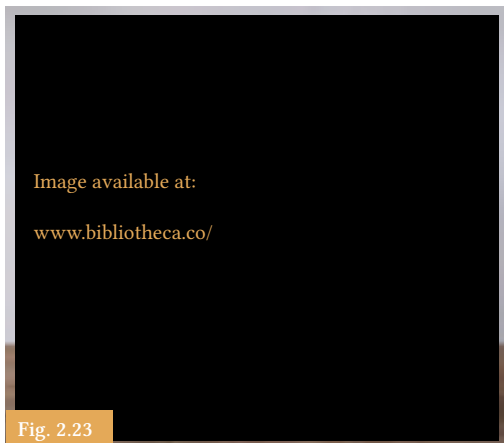


Image available at:
www.bibliotheca.co/

▲ **Fig. 2.23** *The complete clothbound set secured in a solid walnut slipcase (Bibliotheca)*

▲ **Fig. 2.24** *The books were bound with a Smyth-sewn lay-flat binding (Bibliotheca)*

► **Fig. 2.25** *Adam Lewis Green’s custom typeface, Katharos, in print (Bibliotheca)*

to ensure that the book was printed using acid-free paper and cloth bindings. This Bible is referred to as a reader’s version, which means that chapter and verse numbers are missing, making it hard to use practically.

¶ *The Saint John’s Bible* was completed in 2011. In 1998, Saint John’s University in Minnesota commissioned Donald Jackson, a renowned calligrapher from Wales, to begin the creation of “the only handwritten and illuminated Bible commissioned by a Benedictine Monastery since the advent of the printing press more than 500 years ago” (*The Saint John’s Bible*). This book is two feet tall by three feet wide, includes over 1,000 pages, and is contained within seven volumes. This

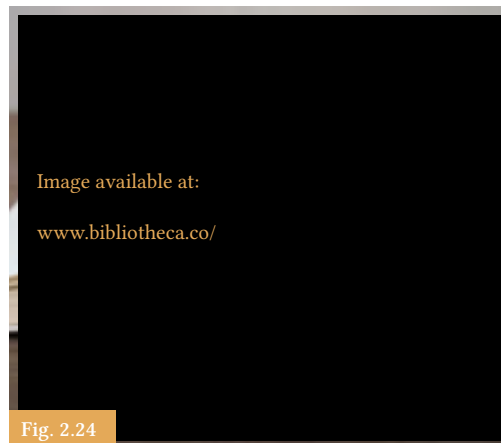


Image available at:
www.bibliotheca.co/

Fig. 2.24



Image available at:
www.bibliotheca.co/

Fig. 2.25

was a massive undertaking. The pigments were hand-ground, gold and silver leaf were applied, and it was written on calfskin vellum in the same tradition that illuminated manuscripts of the Middle Ages would have been made, but the illustrations and illuminations were designed to reflect the current time period. There are two reproduction sets of *The Saint John’s Bible* that may be purchased. The Heritage Edition is a “set of full-size, museum-quality reproduction volumes ...produced in a

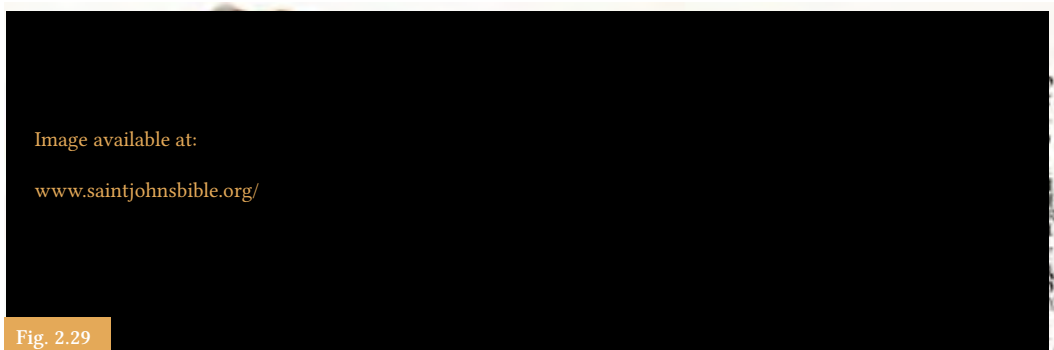
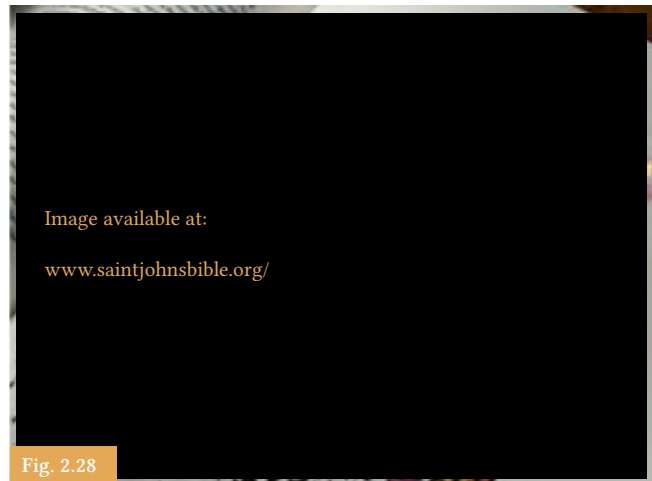
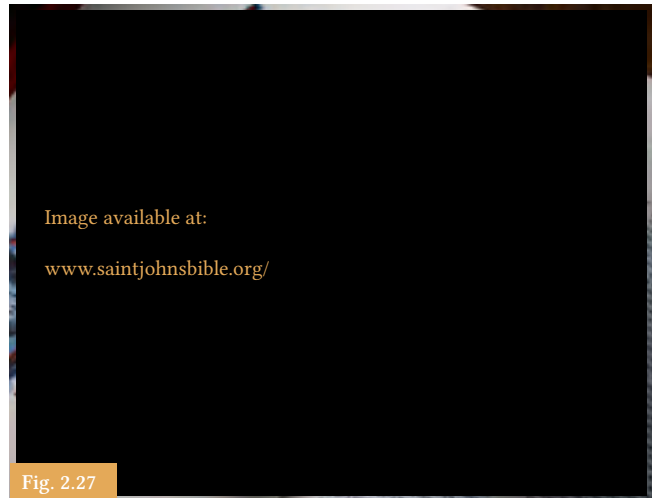


▲ **Fig. 2.26** Donald Jackson working on an illuminated illustration (*The Saint John's Bible*)

▶ **Fig. 2.27** The beginning spread of Genesis (*The Saint John's Bible*)

▶ **Fig. 2.28** The Ten Commandments illumination (*The Saint John's Bible*)

▼ **Fig. 2.29** The introductory spread for the Gospel of John (*The Saint John's Bible*)



limited edition for collectors and institutions” (The Saint John’s Bible). Only 299 facsimile sets were produced, with portions being treated by hand, making each set unique. These are beautiful, and the reproduction quality is second to none. A more

accessible reproduction set was produced as Trade Reproduction Books. These are smaller in size and are available for just under \$400. They are not reproduced to the same quality as the Heritage Edition but are beautiful nonetheless.

Research conclusions and ramifications

¶ It is obvious that there is a desire in this digital age for quality work to be produced. It is evident through this research that the form of the book itself is important as a lasting cultural artifact. Reading by codex is a holistic, uniquely human experience involving all of the senses, one that is created through the unity of all design and material decisions. Technology can be used to bring modifications and modernizations into the book production process, though up until this point these modifications have been applied on the scale of mass production only. On the scale of the limited-edition book, be it small press, private press, or otherwise known, recent experiments have not yet reached into the realm of production, though they have traversed the realm of printmaking. As the research statement

attests, it is important that as technology advances, methods of book production be modified to preserve the holistic experience and cultural commentary encountered in the object of the book in ways that are appropriate to the present time. ■

Reading by codex is a holistic, uniquely human experience involving all of the senses, one that is created through the unity of all design and material decisions.



Chapter 3: Pre-Process

¶ In order to improve a process using modern technology, it is important to understand how that process has been done historically. Printmaking and bookbinding are two processes that have been around for a very long time in many different forms, and it would be almost impossible to learn every aspect of the history of each of these processes. Instead, gaining a general overview of each was necessary to understand the basics of each particular method.

¶ To determine a method of solving my problem using technology, I needed to learn about the historical processes involved in book production, among them:

1. Woodcuts and Relief Printing
2. Bookbinding
3. Paper Marbling

¶ Then I needed to take those processes and consider how I could potentially use technology to modernize them without losing the human element in my final piece.

¶ Once I determined those methods, I needed to consider the visual and material decisions regarding my book, as well as the text itself that I would focus on.

¶ Over the course of this project, I used the knowledge that I gained in order to:

1. Build a printing press
2. Build various bookbinding presses
3. Develop a method for repetitively and accurately printing gold leaf
4. Use a computer and laser-cutter to modernize parts of the woodcut, relief printing, and bookbinding processes.

¶ In this chapter, I will examine each of these methods and explain my process for both learning the historical method and modernizing it as I worked toward my visual solution.

Learning to carve woodcuts

I learned how to carve and print woodcuts using traditional Japanese Namisei Moku Hanga To tools so that I could compare to printing with laser-cut wood. The tools used to carve included v-gouges, u-gouges, and a knife, allowing for a fairly detailed carving as I increased in proficiency.

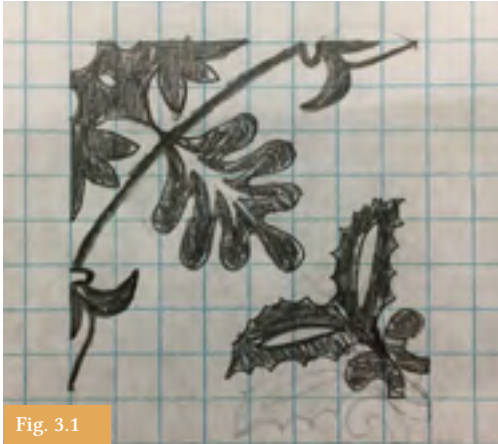


Fig. 3.1

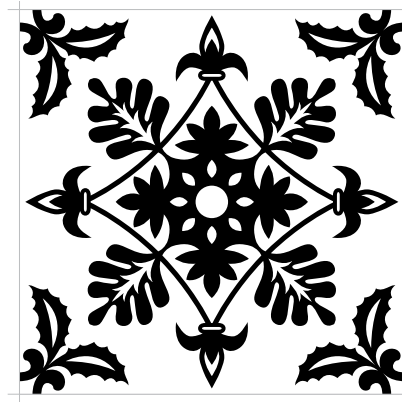


Fig. 3.2



Fig. 3.3

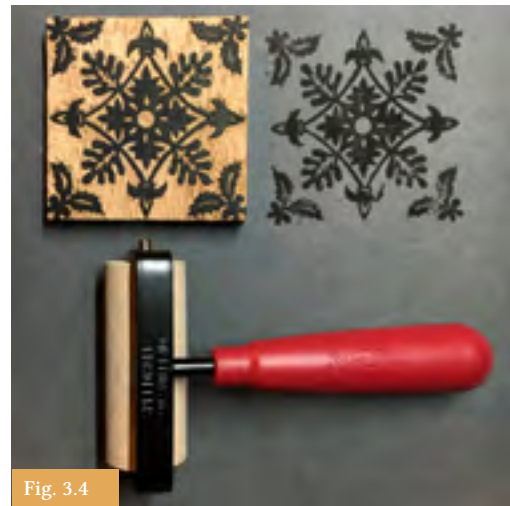


Fig. 3.4

▲ **Fig. 3.1** Initial sketch on graph paper, which was reflected in order to form the final image

▲ **Fig. 3.3** Carving tools next to the in-process block

▲ **Fig. 3.2** Vector illustration that was transferred to the block

▲ **Fig. 3.4** Test print of the block using a brayer and Akua Intaglio ink

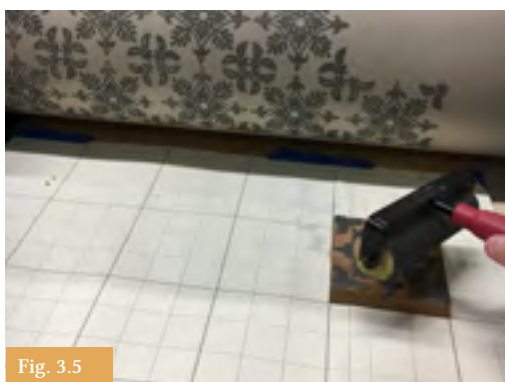


Fig. 3.5

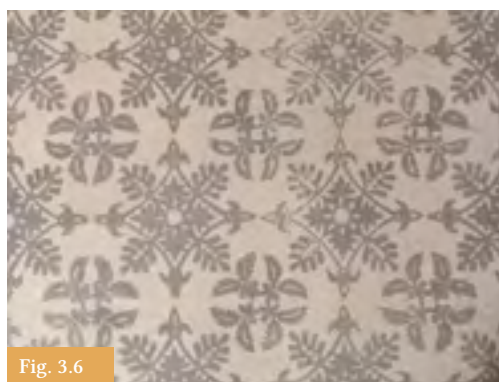


Fig. 3.6



Fig. 3.7



Fig. 3.8



Fig. 3.9

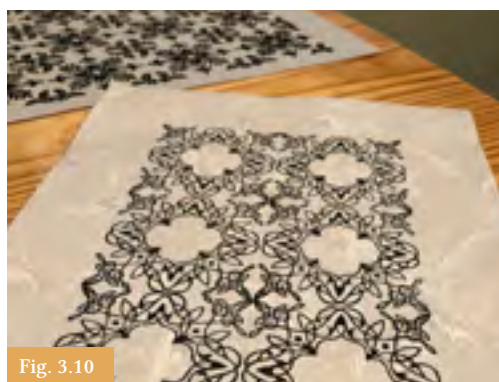


Fig. 3.10

▲ *Fig. 3.5* Using a grid to print the pattern

▲ *Fig. 3.7* A second pattern being carved using a v-gouge Moku Hanga To tool

▲ *Fig. 3.9* Materials used to print the pattern

▲ *Fig. 3.6* Finished pattern print

▲ *Fig. 3.8* The finished block and the Moku Hanga To tools used to carve it

▲ *Fig. 3.10* Finished print on marbled paper

¶ As I began to feel more comfortable with the woodcut tools, I decided to create a series of 26 dropcaps for a typeface I was working on, Schwarzlicht, using the same method as I used for the patterns. I used the same process: beginning with a sketch, vectoring that sketch using Adobe Illustrator, transferring the vector to a woodblock, and carving using the Moku Hanga To tools. Once complete, I printed these blocks as posters, greeting cards, and an accordion book abecedarium, all of which are detailed on the following pages. Below, in *Fig. 3.11-3.12*, are some images of the individual dropcaps in different stages of development.



Fig. 3.11

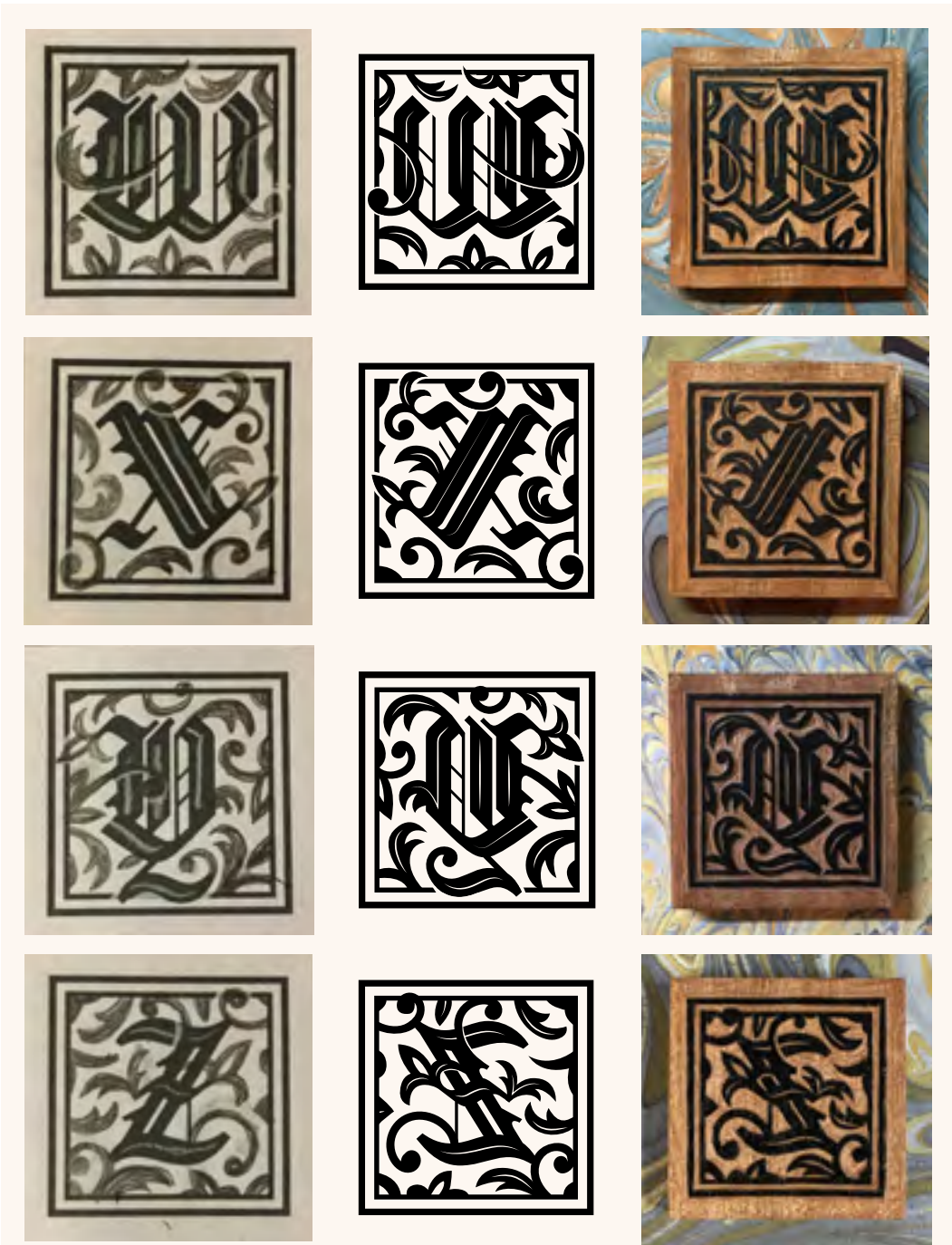


Fig. 3.12



Fig. 3.13



Fig. 3.14



Fig. 3.15

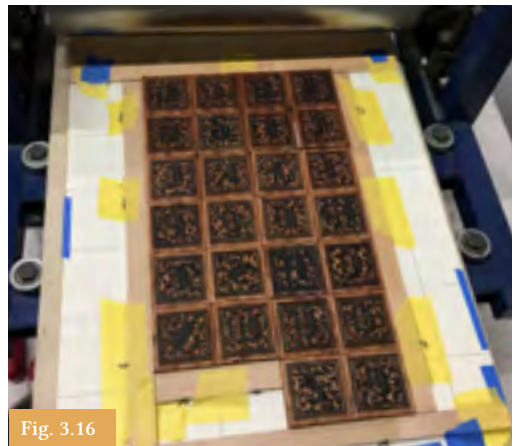


Fig. 3.16



Fig. 3.17



Fig. 3.18



Fig. 3.19

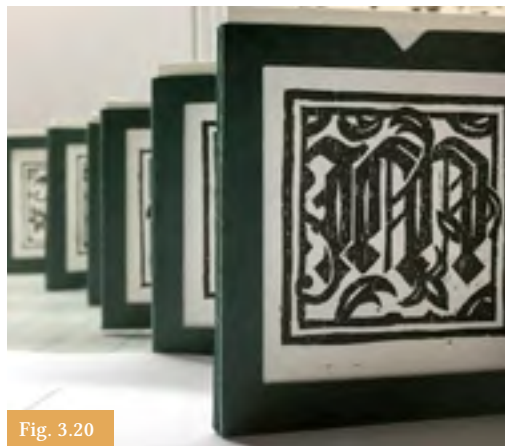


Fig. 3.20

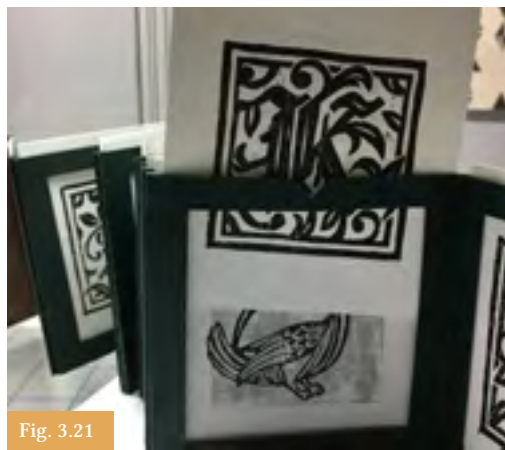


Fig. 3.21

- ◀ **Fig. 3.13** Tracing the printed vector illustration onto the woodblock
- ◀ **Fig. 3.14** Beginning to ink in the traced image
- ◀ **Fig. 3.15** Mid-carving shot, showing the v-gouge that was used
- ◀ **Fig. 3.16** The 26 dropcaps locked in to be printed on an etching press
- ◀ **Fig. 3.17** Marbled paper being lifted from the blocks

- ◀ **Fig. 3.18** Printed posters with all 26 dropcaps printed
- ▲ **Fig. 3.19** An interactive accordion abecedarium printed with medieval beasts using hand-carved woodblocks, hand-carved linocuts, screen printing, and lasercut woodblocks, created in order to compare the different printing methods
- ▲ **Fig. 3.20** Detailed shot of the abecedarium
- ▲ **Fig. 3.21** Each printed dropcap lifted out of its pocket to reveal the printed beast underneath

Comparing Hand-Carved Woodcuts with Laser-Cut Woodcuts

¶ Once I understood the process of carving and printing woodcuts, I wanted to compare how the hand process would compare to a laser-cut process and figure out what adjustments would be necessary to create something that still felt human.

¶ I first created two bookplate designs using the same process and similar line qualities. I hand-carved the first using the same method as the dropcaps and laser-cut the second using a Universal Laser PLS 4.75 available through the Liberty University School of Engineering. Then I printed both of them to see what the differences were so that I could consider those differences when creating my visual solution.



Fig. 3.22



Fig. 3.23

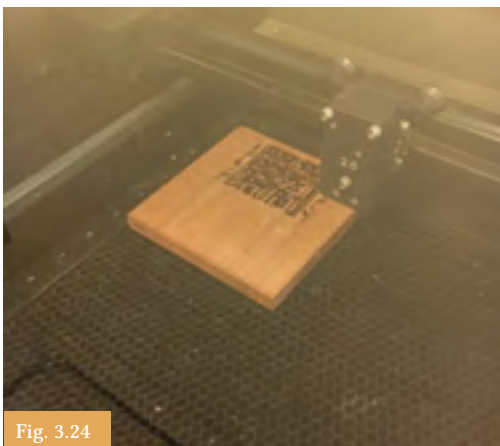


Fig. 3.24



Fig. 3.25



Fig. 3.26



Fig. 3.27



Fig. 3.28

- ◀ Fig. 3.22 Traced image on the block before carving
- ◀ Fig. 3.23 Beginning to carve the traced image
- ◀ Fig. 3.24 Sapele wood in the laser cutter
- ◀ Fig. 3.25 Close up of the laser-cut woodblock
- ▲ Fig. 3.26 Hand-carved block print
- ▲ Fig. 3.27 Laser-cut block print
- ▲ Fig. 3.28 Side-by-side comparison of the hand-carved and laser-cut block prints

¶ When comparing the two, I found that the laser-cut block lacked the imperfections of the hand-carved block. When working with a laser-cut image, it is difficult to remove the digital perfection from the images. Part of the solution was to intentionally choose wood that would show grain when printing. I chose sapele wood, which is a type of African mahogany.

¶ I determined, through some trial and error, to adjust my files so that the illustrations would have a slight roughness to them. Another consideration was to print on a textured paper, which would allow for more variation in print. Previously I had been printing using either a spoon or an etching press. The spoon is not practical for more than a handful of prints and is very slow. An etching press allows for a very dark impression, a true black on the page. Most printers love this about etching presses, but for my purposes, it was too perfect and was not allowing enough of a human element into the final impression. I determined to build my own press that could function as both a printing press and a bookbinding press.

Building a printing press

¶ The following pages detail the work that went into building my printing press by hand. The goal was to build a screw press large enough to accommodate printing a 2-page spread and also be able to operate as a book press.

¶ To build the press, I researched historical bookbinding presses, which are generally made of cast iron, current DIY press plans available online, and the presses that modern printmakers have created themselves. I discovered the portable BookBeetle Press ([Fig. 3.29](#)) that Josef Beery, a printer in Charlottesville, Virginia, created and modeled much of my design after his press, though I made some adjustments so that it could be used as book press as well and made it larger to accommodate my desired print size.

▶ [Fig. 3.29](#) Josef Beery's BookBeetle press in the midst of a print run (BookBeetle)

▶ [Fig. 3.30](#) Initial sketches

▶ [Fig. 3.31](#) Secondary sketches to determine connections, materials, and approximate sizes



Fig. 3.29

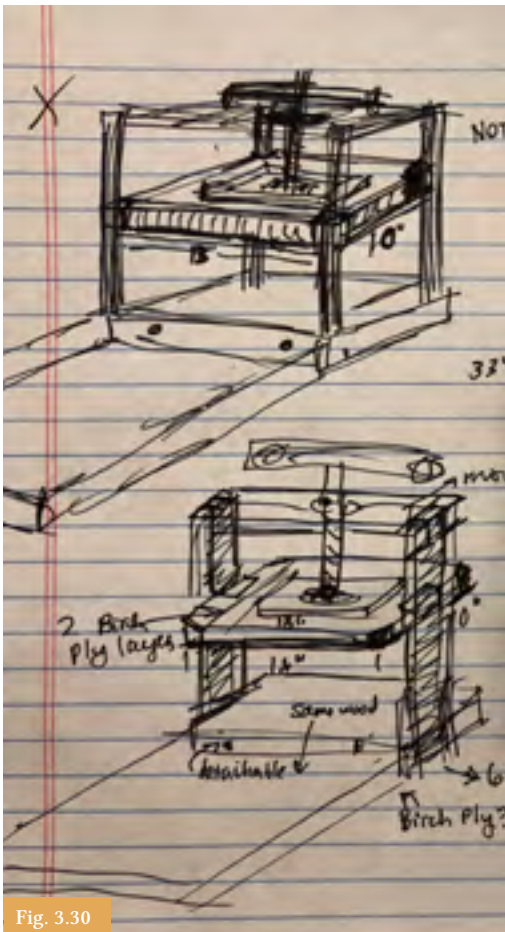


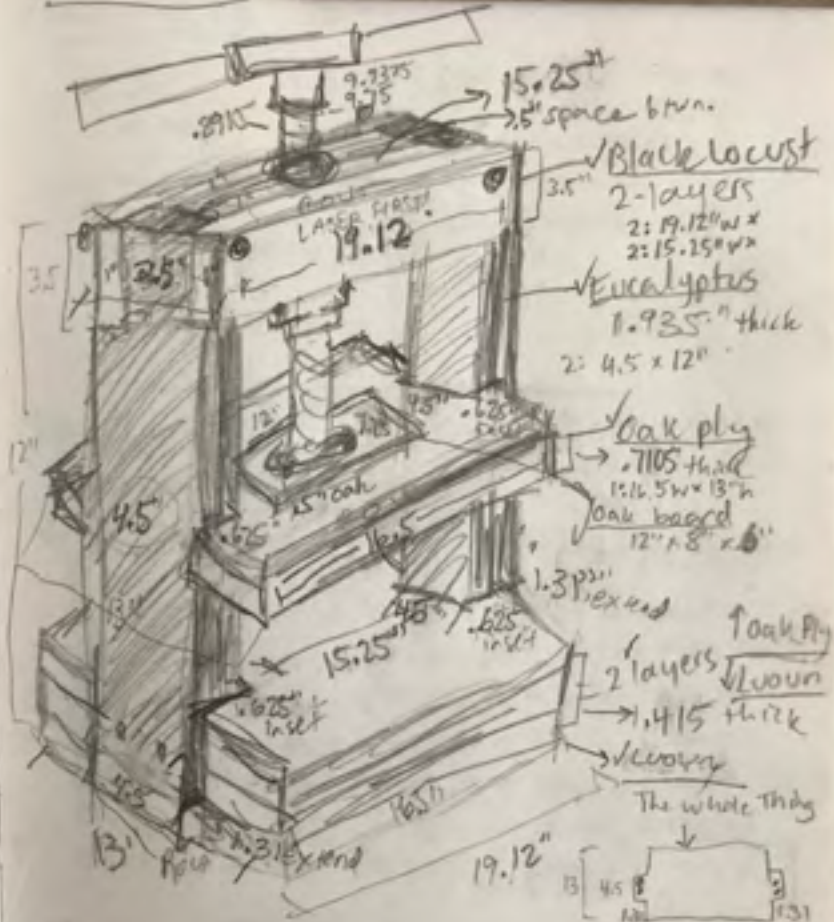
Fig. 3.30



Fig. 3.31

Dimensions

x8



- ✓ 2x Bolts: 45 bolt (conraige)
 1 head
- ✓ 4x Screws: Bottom 3.5 min

33.24
 30.5
 BL. loc. 68.74
 $2.785C$

$65 \times 9.1875 =$ (used area on support.

Fig. 3.32



Fig. 3.33



Fig. 3.34

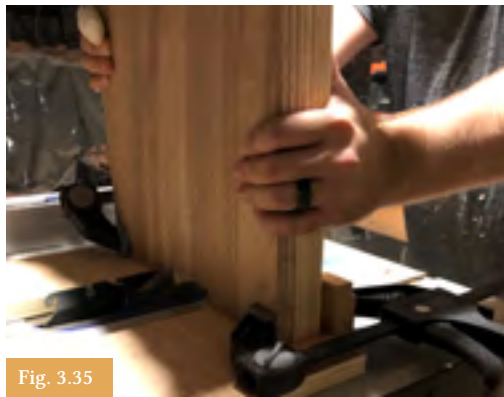


Fig. 3.35

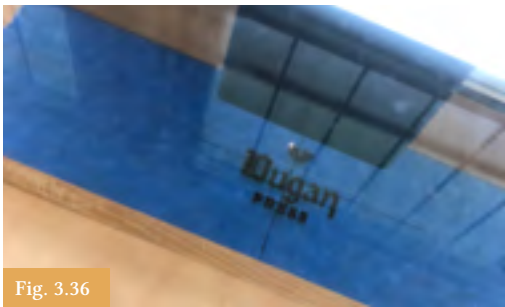


Fig. 3.36



Fig. 3.37

- ◀ **Fig. 3.32** Final sketch detailing all sizes and materials — drawing is not to scale
- ▲ **Fig. 3.33** Planing the black locust for the top bar
- ▲ **Fig. 3.36** Laser-cutting the top bar

- ▲ **Fig. 3.34** Gluing the base together
- ▲ **Fig. 3.35** My husband using a table saw to cut the notches in the base for the arms to sit flush
- ▲ **Fig. 3.37** Detail of laser engraving



Fig. 3.38



Fig. 3.39



Fig. 3.40



Fig. 3.41

¶ After testing out the press in this first edition format, I realized that the handle was not giving me enough leverage to achieve a good print. It also had a tendency to fall off without endcaps. This was remedied and can be seen in various states in *Figs. 3.44-46*.

- ▲ *Fig. 3.38* Detail of drilled and routed holes for the vise screw to fit through
- ▲ *Fig. 3.39* The glue-up used to attach the side arms
- ▲ *Fig. 3.40* Dry fitting everything before assembly
- ▲ *Fig. 3.41* All pieces were treated with stain and polyurethane before assembly

- ▶ *Fig. 3.42* Top section of the first edition of the Dugan Press, fully assembled and ready to print
- ▶ *Fig. 3.43* Side view
- ▶ *Fig. 3.44* A removable section that was created in order to provide a surface for inking and sliding the print into the press without needing to lift it up
- ▶ *Fig. 3.45* Staining the updated handle
- ▶ *Fig. 3.46* Assembling the updated handle



Fig. 3.42



Fig. 3.43



Fig. 3.44



Fig. 3.45

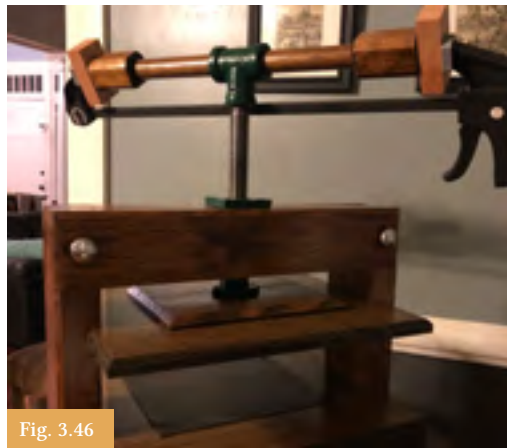


Fig. 3.46

¶ After a couple of print runs, the screws that I used to adhere the side arms to the base (left screw in [Fig. 3.48](#)) pulled up through the plywood and broke the press in the process. To fix this, I used much heavier screws with a washer embedded in the head of the screw and added a solid oak base beneath the already existing plywood base for added stability.

¶ Lastly, about halfway through printing my visual solution, the black locust top bar split in half ([Fig. 3.49](#)) due to the upward pressure pulling the screws that mounted the threaded guide to the top bar. Mid-printing, I had to build a new top bar, which I made from red grandis eucalyptus to match the side arms and fix the threaded guide to the bottom of the top bar instead of the top.



Fig. 3.47



Fig. 3.48

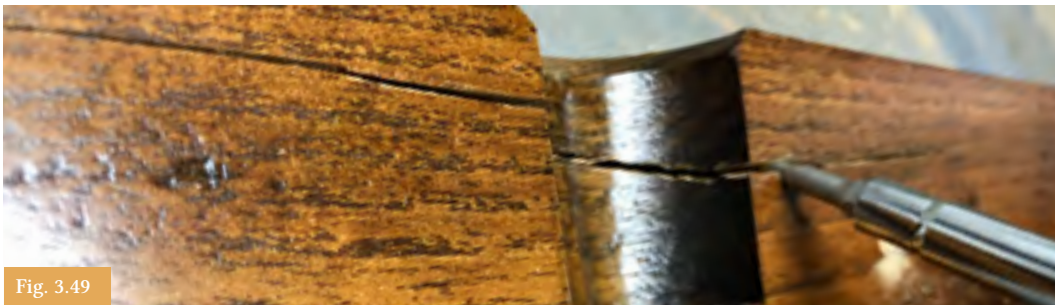


Fig. 3.49

- ▲ [Fig. 3.47](#) The first set of screws used to mount the base to the arms compared to the second set of screws
- ▲ [Fig. 3.48](#) Adding and recessing the new screws to the oak base
- ▲ [Fig. 3.49](#) Detail of the cracked top bar after being removed from the press. The pressure split the wood

almost completely across the entire board width in line with where the top screws were pulling up each time a print was pulled

- ▶ [Fig. 3.50](#) Finished press with several books being pressed on either side
- ▶ [Fig. 3.51](#) Finished press with extension



Fig. 3.50



Fig. 3.51

Building bookbinding presses

¶ The press I built to print my book also functions as a bookbinding, also called nipping, press. It is used mainly for flattening the text block at different stages and can be used at the end of the binding process while the endpapers are drying to the covers. There are several other types of presses that can be used to bind books. All of these can be purchased online, though there are also plans to make them yourself online. I made all of the presses on the following pages with the help of my husband. They are all fairly simple builds.



Fig. 3.52



Fig. 3.53



Fig. 3.54



Fig. 3.55



Fig. 3.56

◀ **Fig. 3.52** Wooden punching cradle used to punch holes in the signatures before sewing

▲ **Fig. 3.53** The wooden base for all of the presses

▲ **Fig. 3.55** Backing irons used to form and round the spine. The metal allows a hammer to be used without damaging the wood

▲ **Fig. 3.54** Lying press used to press pages before sewing, to glue the spine, and to hold the book when gluing leather to the spine

▲ **Fig. 3.56** Sewing and tying up press used to aid in sewing the signatures into text blocks and for tying up the leather once it is added so it dries properly around the raised cords

Learning to bind books

I was fortunate to be able to take two courses that allowed me to learn about historical methods of bookbinding. The first was at the Virginia Arts of the Book Center in Charlottesville, Virginia, in the summer of 2016. I received a Core Bookbinding Certificate in an intensive course where I learned the basic structure of case-bound books. This is where I learned to sew signatures, what materials to use, and what presses and equipment I would require.

In 2017, I received the Directors Scholarship which allowed me to take a course through the Rare Book School. In the summer, I took “The History of the Book, 200-2000” with Mark Dimunation and John Buchtel. Dimunation is the Chief of the Rare Book and Special Collections Division at the Library of Congress, and Buchtel was the Head of Special Collections at Georgetown University and now serves in the same role at the Boston Athenaeum. This course was incredibly helpful in giving me a historical overview of the book; introducing me to many different book structures, terminology, and historical printing methods; and allowing me to interact with incredibly old and rare books.

After taking this course, I set out to learn leather binding. This was difficult because I had to learn from old books, blog tutorials, and videos I could find online. There are a lot of people who post DIY tutorials that do not use proper techniques, so sorting through them with my limited knowledge base was difficult. Thankfully, my background from the Rare Book School taught me a lot of what to look for and gave me a good idea of when something was being done incorrectly.

The following pages detail some of my learning experiences in leather binding.

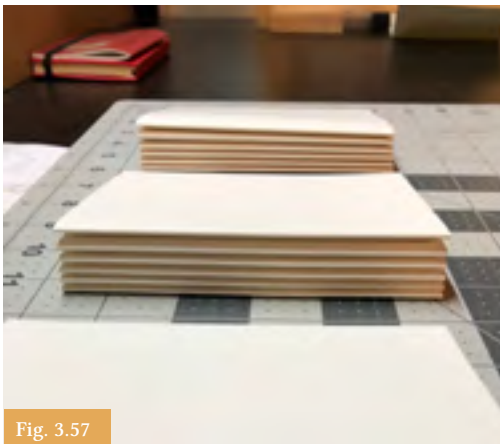


Fig. 3.57



Fig. 3.58

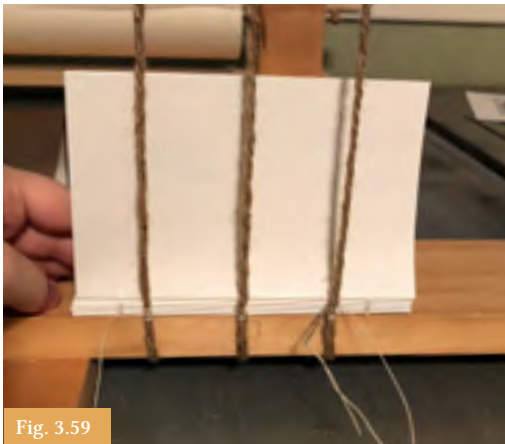


Fig. 3.59

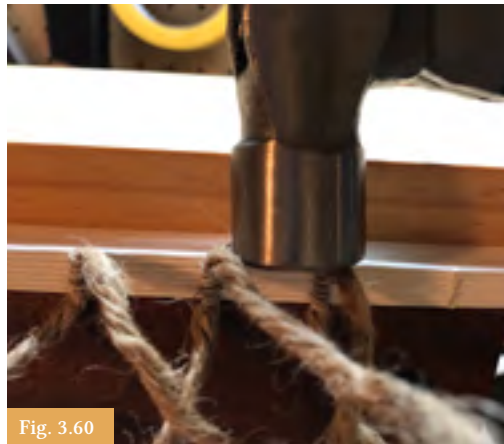


Fig. 3.60



Fig. 3.61

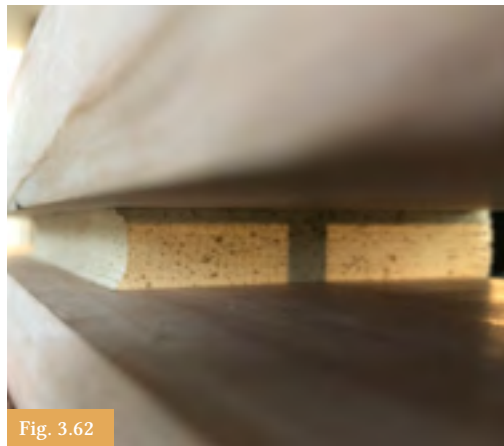


Fig. 3.62

- ◀ **Fig. 3.57** Signatures are folded using a bone folder
- ◀ **Fig. 3.58** Signatures after punching
- ▲ **Fig. 3.59** Sewing onto three raised cords
- ▲ **Fig. 3.61** Laser-cutting the bookboards produce a true 90° angle and laser engraving sections for the frayed cords to sit in allow them to lay flatter

- ▲ **Fig. 3.60** Knocking down the book so the cords bend correctly before rounding
- ▲ **Fig. 3.62** A book sitting in the press after the spine was rounded



Fig. 3.63



Fig. 3.64

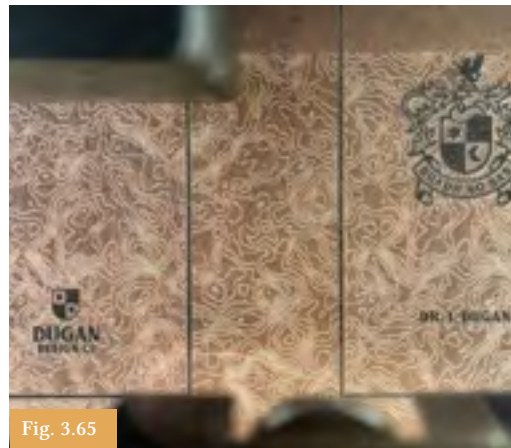


Fig. 3.65

▲ **Fig. 3.63** Two books with sewn headbands and edge painting

▲ **Fig. 3.64** First sewn headband and edge painting

▲ **Fig. 3.65** A two layer laser engrave at varying power settings creates a unique texture in the leather

▶ **Fig. 3.66** First successful book bound with a laced-in leather binding

▶ **Fig. 3.67** Third book from the right is one of my first few books. It fits right in on an old bookshelf



Fig. 3.66



Fig. 3.67

Printing gold leaf

¶ For my visual solution, I determined that I wanted to use 23-karat gold leaf as one of two colors in my illustrations. I tried several gold inks and did not feel that they had the right feel for this project. In order to add gold leaf, I had to figure out a method of printing that would work for multiple prints at a time. Below are images showing some of my attempts and their subsequent results. I used both 12- and 22-karat gold for these because that was what I had on hand.



Fig. 3.68



Fig. 3.69



Fig. 3.70

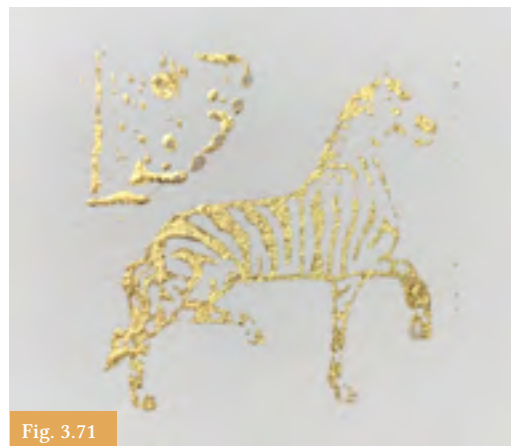


Fig. 3.71



Fig. 3.72



Fig. 3.73

◀ **Fig. 3.68** Mona Lisa Metal Leaf Adhesive Size that was used to adhere the gold

◀ **Fig. 3.69** An earlier project that inspired this course of action, which was printed on fabric using a woodblock and Mona Lisa Size with 12K gold leaf

◀ **Fig. 3.70** An early failed attempt at printing black ink and adhering the gold while it was tacky

◀ **Fig. 3.71** Printing with Mona Lisa Size only led to a lack of detail and the glue dried too quickly on the ink plate for multiple prints to be possible

▲ **Fig. 3.72** Several attempts were made with mixing Mona Lisa Size with Akua Intaglio, Caligo Safewash, and Speedball Acrylic inks. The Speedball performed best and had the added benefit of being essentially dry as soon as the gold was added. I used approximately one part Mona Lisa Size, three parts Speedball Acrylic, plus 22K gold, which yielded a solid print with good detail, and multiple prints could be pulled

▲ **Fig. 3.73** The same solution was attempted using 12K gold on hand-marbled paper

Marbling paper

¶ One of the historical processes I wanted to learn before creating my visual solution was paper marbling. This is an old process dating back to the tenth century in East Asia, where it is known as *suminagashi*. I chose to follow the Turkish *ebru* method, which is what most European texts used beginning around the seventeenth century. I was able to attend a paper marbling workshop at Virginia Commonwealth University taught by guest professor Dr. Evan Davis from Hampden-Sydney College. From this workshop I learned about the tools and materials needed to marble paper.



Fig. 3.74



Fig. 3.75

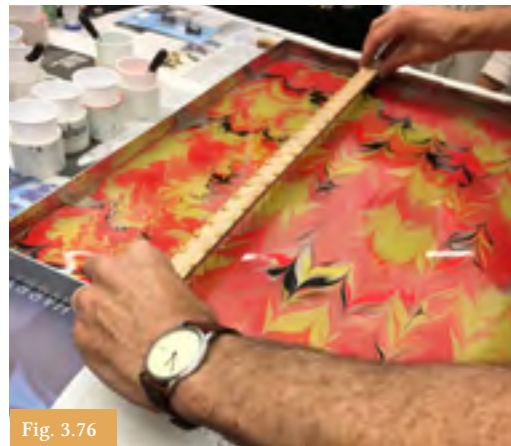


Fig. 3.76

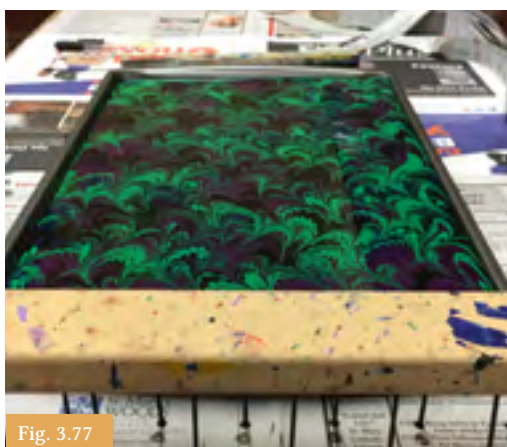


Fig. 3.77

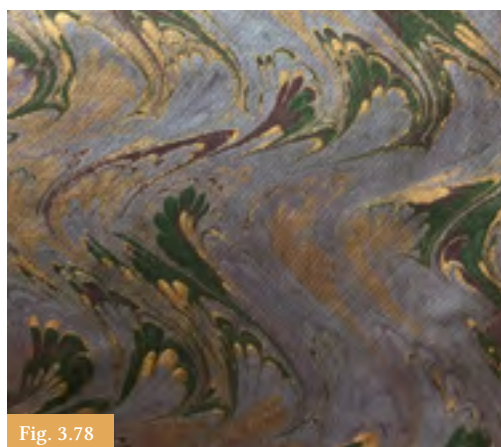


Fig. 3.78



Fig. 3.79

- ◀ **Fig. 3.74** Before marbling, all paper must be treated with alum in order for the paint to adhere
- ◀ **Fig. 3.75** Golden High Flow Acrylic is floated on a thickened mixture of carrageenan
- ◀ **Fig. 3.76** Various combs are used to create traditional patterns in the paint

- ▲ **Fig. 3.77** A traditional peacock pattern floating in the carrageenan
- ▲ **Fig. 3.78** Detail of a marbled page with a loose peacock pattern using metallic paints
- ▲ **Fig. 3.79** Completed marbled papers of varying designs hanging to dry



Chapter 4: Visual Solution

¶ Once I learned the processes involved in printing and producing a book, I was able to move toward solving my problem creatively. This process involved many decisions based off of my research.

¶ First of all, I worked with an Old Testament scholar, Dr. Gary Yates, from the Liberty University School of Divinity. He was able, with a team of student researchers, to translate the book of Proverbs into a version that sits somewhere between the English Standard Version and the New American Standard Bible. It remains true to the original Hebrew while focusing on being understandable to a modern audience.

¶ To help bring back the *gravitas* evident in hand-printed, hand-bound books of the past, I determined to include an illustration, or illumination, at the start of each of the thirty-one chapters, as well as a title page illustration. The goal of doing this was to create a more artistic and engaging book that reflects the beauty of the Word of God. However, unlike many illuminated manuscripts, I wanted these illustrations to remain more conceptual and abstract in nature while still connecting to that individual chapter.

¶ To determine an appropriate format for Proverbs, there were some important socio-logical decisions that I needed to make. These included:

1. Typography
2. Page Layout and Proportion
3. Paper Stock
4. Printing Method
5. Binding Structure

¶ In this chapter, I will go through both the decisions that I made to create a solution that appropriately modernizes parts of the book production process while preserving the holistic experience encountered in the object of the book and the visual solution itself.

¶ Over the past several years I have developed two typefaces, Cathedral Gothic Text and Schwarzlicht. Cathedral Gothic Text is a modern blackletter typeface that was created to be extremely legible at small sizes. Schwarzlicht is a modern display blackletter with two weights that was also created to be easily readable by a modern audience.

¶ These two typefaces have a very particular aesthetic that harkens back to German Bibles, particularly those printed by Gutenberg, while feeling completely at home in a modern context.



Fig. 4.1

Cathedral Gothic Text

Schwarzlicht
Regular

Schwarzlicht
Modern

27 He who has knowledge restrains his words, ¶ and the one who keeps a cool head is a man of undertsanding.
28 Even a fool is considered wise if he keeps silent; ¶ when he keeps his mouth shut, he is considered discerning.

Fig. 4.2

◀ Fig. 4.1 Laser engraved woodblock featuring Cathedral Gothic Text

▲ Fig. 4.2 Printed page set in Cathedral Gothic Text. The subtle indentation of the printed text on the page is visible

Page layout and proportion

¶ As this is a piece of a sacred text, I chose to use the divine proportion that was used in early manuscripts and sacred texts. The only text that was allowed to break these proportions was the book and chapter number, and the page numbers were allowed to be placed in the margin area. This decision was made to keep the illustration proportions the same as the text area and keep the piece balanced. It also helps with skimming through the book while looking for a specific chapter. I chose to make the book 5.25" wide by 8" high. This size is easy to hold and transport.

¶ I used a single-column layout to reduce issues with rag and also to keep the page count down. Since Proverbs is a book of poetry, it has a lot of line breaks. I chose to use a pilcrow to designate line breaks within each verse to help keep the page count down and reduce trapped negative space on the verso (left) pages.



▲ Fig. 4.3 The divine proportion in use for the book of Proverbs, designated with white lines

Paper stock

¶ Paper is an extremely important decision because it creates the tactile experience that people have as they turn the pages of the book. Combined with the printing method and binding structure, paper selection can give a book an extremely high or extremely low quality feel.

¶ I chose to use BFK Rives Lightweight, a 115gsm French mouldmade printmaking paper made by ARCHES®. It is acid-free, archival quality, 100% cotton, and features a light grain that has a very nice feel. I decided to use cream to help achieve a more luxurious feel and to work better with the gold leaf. Since this is a printmaking paper, it also helps give the piece a more artistic touch when turning the pages.



Fig. 4.4

▲ **Fig. 4.4** White BFK Rives Lightweight compared to Cream BFK Rives Lightweight



Fig. 4.5

▲ **Fig. 4.5** The subtle texture of BFK Rives can be seen in this image; it almost shimmers

Printing method

¶ The entire book was printed via letterpress printing on my hand-built printing press. This printing method introduces variation to the prints, and the woodgrain texture is visible on the illustrations. I did not want a deep impression since it would be printed on both sides of the page. Instead I opted for a kiss-print which does not leave much of an impression. The gold was printed and added as the first color, and black was printed on top of it. A frisket was cut from the first print with a layer of masking tape to prevent ink from printing where it was not supposed to.



Fig. 4.6



Fig. 4.8

▲ **Fig. 4.6** A future frisket is covered in masking tape before it is cut

▲ **Fig. 4.8** Detail of the printed woodgrain texture as seen in chapter one



Fig. 4.7

▲ **Fig. 4.7** Mid-print run image of the frisket in use. It is folded down over the inked blocks and the blank paper is placed over top of it

Printing process

¶ In order to print the book, I determined to use laser-cut woodblocks made from sapele wood. I designed and layed out the book using Adobe InDesign. All of the illustrations began as sketches and were vectored using Adobe Illustrator. Once the book was layed out, I used a Glowforge laser-cutter to cut each page into its own block. Then I sealed the blocks and printed them with my printing press.

¶ The following pages showcase parts of this process.

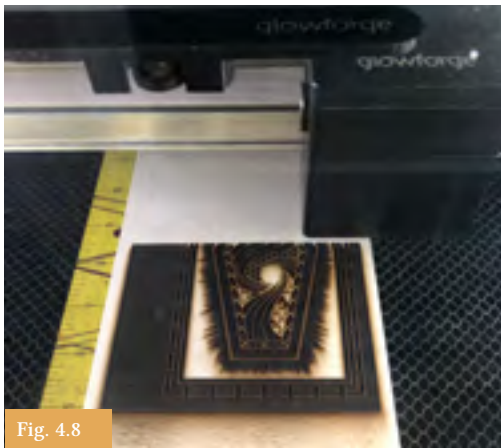


Fig. 4.8



Fig. 4.9



Fig. 4.10



Fig. 4.11



- ◀ **Fig. 4.8-4.10** The Glowforge laser engraving various woodblocks
- ◀ **Fig. 4.11** Duct tape was used to remove the masking tape left on the blocks after cutting

- ▲ **Fig. 4.12-13** Various woodblocks cut on the Glowforge
- ▲ **Fig. 4.14** Before printing, shellac was applied to both sides of the woodblocks so the ink would not soak in



Fig. 4.15



Fig. 4.16



Fig. 4.17



Fig. 4.18

- ▲ Fig. 4.15 Blocks drying after receiving shellac
- ▲ Fig. 4.17 Inking the plate

- ▲ Fig. 4.16 Setting up a spread in the jig
- ▲ Fig. 4.18 Frisket down and ready for a sheet to be placed
- ▶ Fig. 4.19-23 Printed spreads at various stages

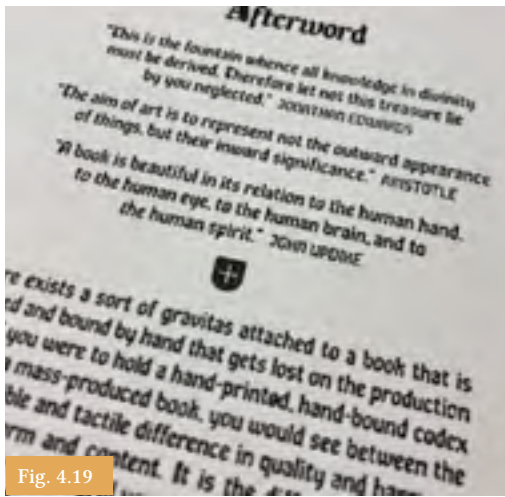


Fig. 4.19

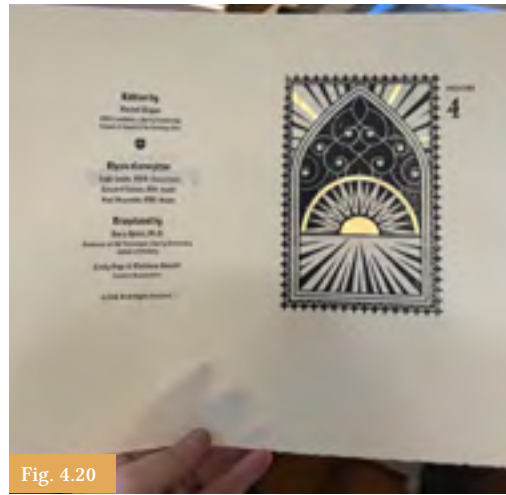


Fig. 4.20

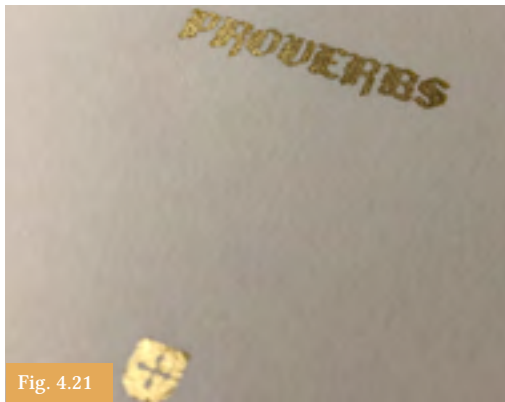


Fig. 4.21



Fig. 4.23

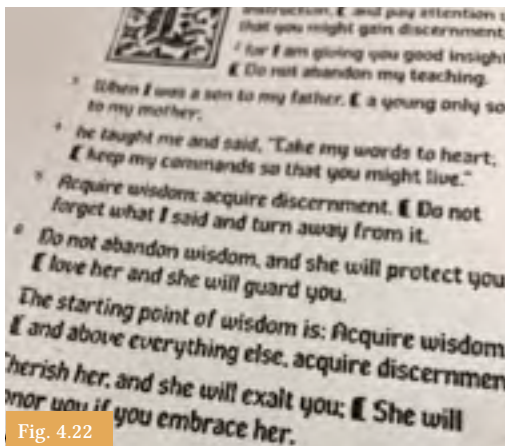


Fig. 4.22

Binding structure

¶ For this text, I chose a full leather 5-cord laced-in binding structure modeled after medieval bindings. This structure is very sturdy and will last for hundreds of years. One of the reasons that modern books fall apart so easily is that the case is separate from the text block, so glue is the only thing holding the cover on the book. In a laced-in structure, the cords are sewn into the text block and then laced into the bookboards. It would be very difficult, if not impossible, for the boards to separate from the text block. This structure is part of the reason that so many medieval manuscripts survive today.

¶ The following pages detail my method of binding.



Fig. 4.24

- ▲ **Fig. 4.24** All signatures before being folded
- ▲ **Fig. 4.25** Each signature was labeled A-H with the corresponding book number
- ▶ **Fig. 4.26** A light table ensured that all pages within each signature lined up properly

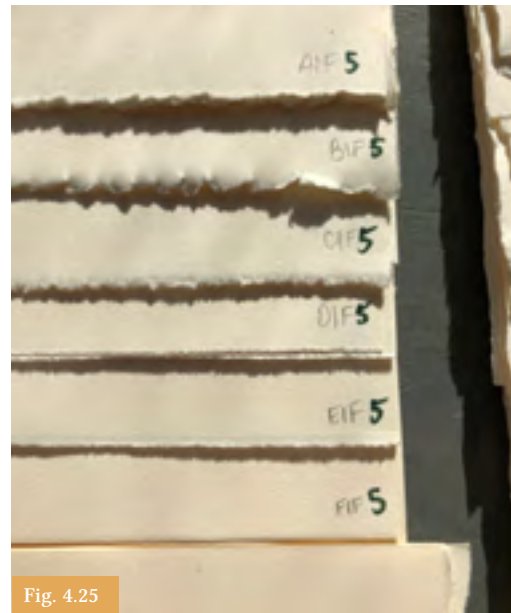


Fig. 4.25

- ▶ **Fig. 4.27** A bone folder was used to fold each signature and punched in the punching cradle
- ▶ **Fig. 4.28** Once all signatures in a book were folded, that book was pressed in the book press. This image shows a book that had not been pressed on the left compared to a book that was pressed
- ▶ **Fig. 4.29** All signatures sit ready to be sewn
- ▶ **Fig. 4.30** A book in the middle of being sewn



Fig. 4.26

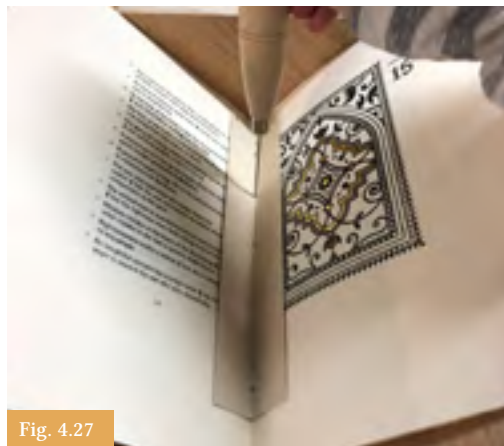


Fig. 4.27



Fig. 4.28



Fig. 4.29

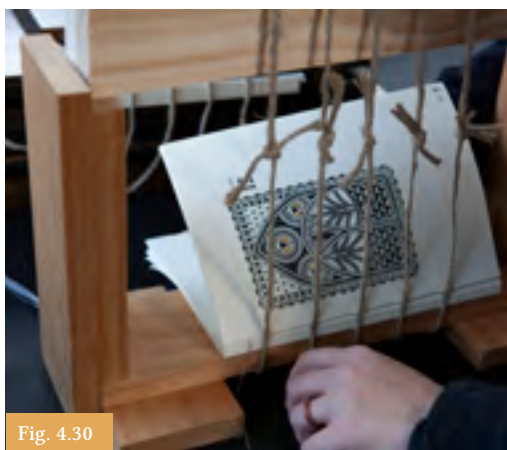


Fig. 4.30



Fig. 4.31



Fig. 4.32

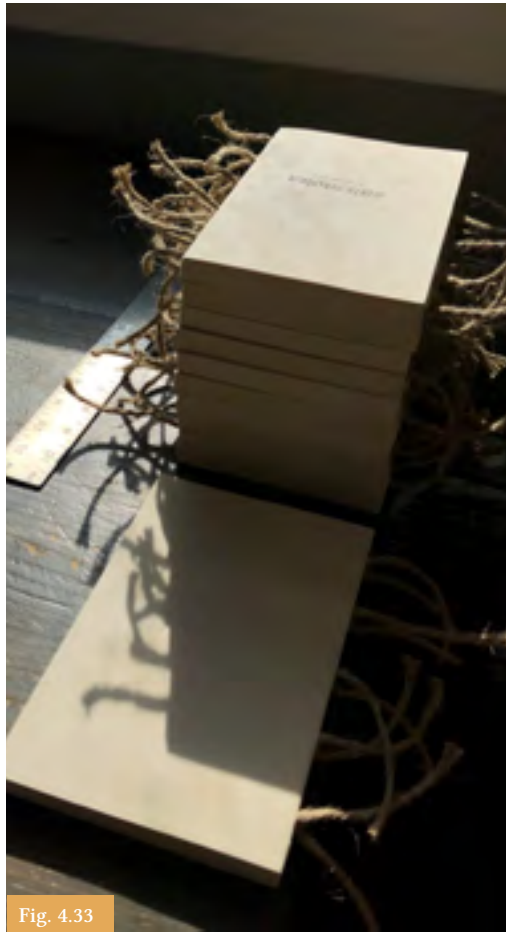


Fig. 4.33



Fig. 4.34



Fig. 4.35



Fig. 4.36

◀ *Fig. 4.31* Once sewn, the spine was glued

◀ *Fig. 4.32* All books before being trimmed

◀ *Fig. 4.33* All books after being trimmed

▲ *Fig. 4.34* To round the spines, first each book must be hammered until the spine is perfectly rounded

▲ *Fig. 4.35* Once rounded, the book is placed in the book irons and hammered using glancing blows in order to mushroom out the rounded spine so it will sit flush with the bookboard

▲ *Fig. 4.36* Edge painting using metallic acrylic paint



Fig. 4.37



Fig. 4.38



Fig. 4.39



Fig. 4.40



Fig. 4.41



Fig. 4.42



Fig. 4.43

- ◀ Fig. 4.37 Detail of the painted edges
- ◀ Fig. 4.38 All books before headbands were added
- ◀ Fig. 4.39 Sewing the headbands and endbands
- ◀ Fig. 4.40 All books with headbands and endbands
- ▲ Fig. 4.41 All of the bookboards were laser-cut and

engraved using a Glowforge, then notches were cut and grooves were carved for the cords to sit flush to the bookboard

- ▲ Fig. 4.42 Lacing in the cords
- ▲ Fig. 4.43 The books were wrapped with wax paper to prevent damage



Fig. 4.44



Fig. 4.45

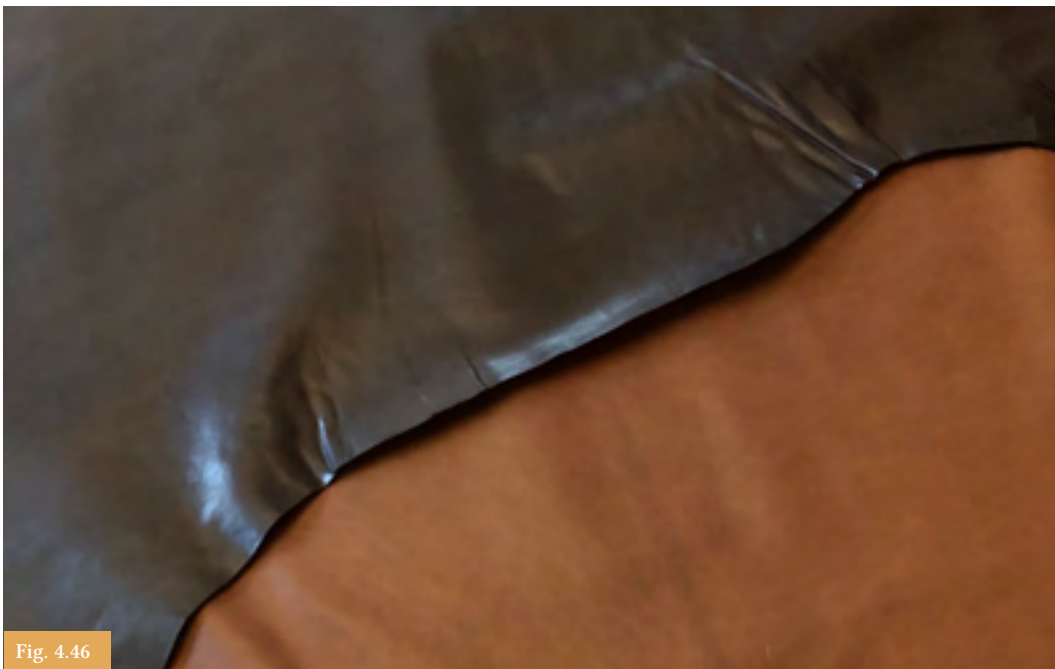


Fig. 4.46

- ▲ **Fig. 4.44** The cords were frayed out and glued
- ▲ **Fig. 4.45** Then the books were pressed for several hours so they would lay flat
- ▲ **Fig. 4.46** I selected Moore & Giles leather in two colors for this edition
- ▶ **Fig. 4.47** The leather was laser-engraved and cut
- ▶ **Fig. 4.48** Detail shot of the leather
- ▶ **Fig. 4.49** The back of the leather had to be pared using a skife knife so the folds would not be as heavy
- ▶ **Fig. 4.50** Wheat starch paste was applied to the leather and allowed to soak before reapplication



Fig. 4.47



Fig. 4.48



Fig. 4.49



Fig. 4.50



Fig. 4.51

▲ *Fig. 4.51* The leather was tied up and left overnight to ensure that the wheat starch paste was dry. The strings force the leather to adhere around the cords properly

▲ *Fig. 4.52-4.65* Images detailing the final visual solution: *The Book of Proverbs*

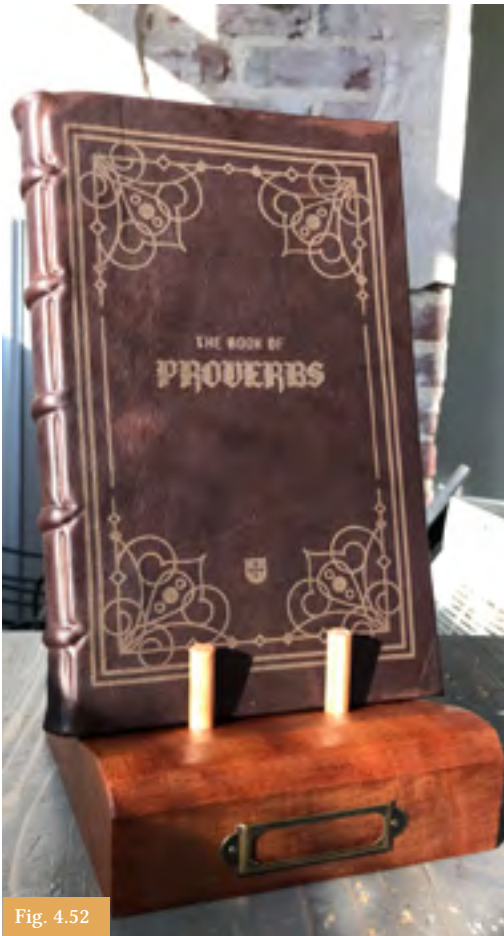


Fig. 4.52



Fig. 4.53



Fig. 4.54

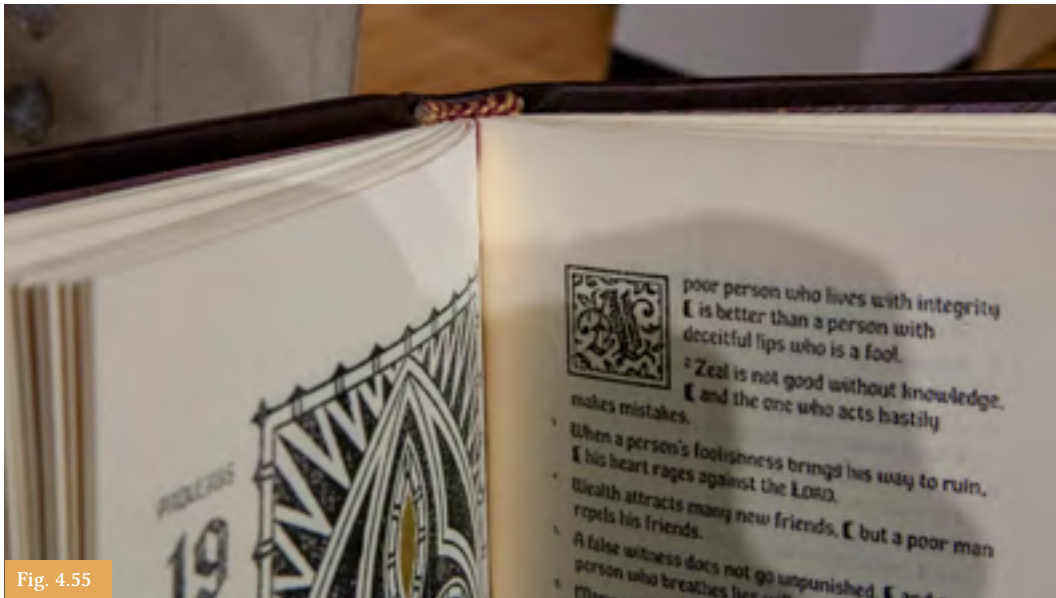


Fig. 4.55



Fig. 4.56



Fig. 4.57

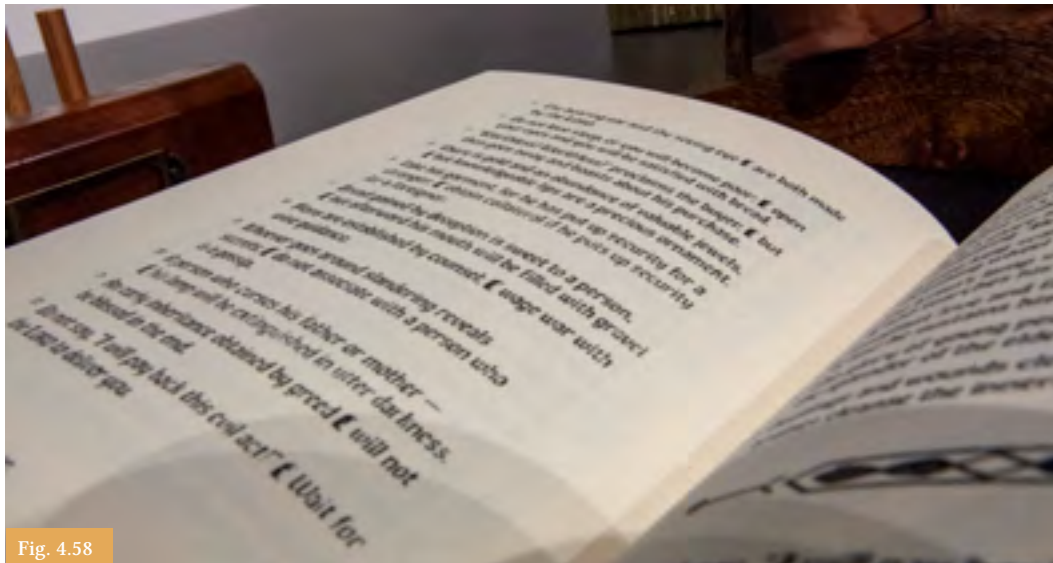


Fig. 4.58



Fig. 4.59



Fig. 4.60



Fig. 4.61



Fig. 4.62



Fig. 4.63



Fig. 4.64



Fig. 4.65



Chapter 5: Conclusion

¶ In the modern era, books *can* be produced that present a unified message in their physical format and textual meaning. I have offered up a solution by which book production methods could be modernized using technology in a way that the craftsmanship and humanity — the *gravitas* — of books of the past can be reintroduced to our shelves in a way that is aesthetically pleasing, harmonious in message, and reflective of the present time.

¶ In light of other sacred texts, this final book is a one-of-a-kind product that is, from everything I have seen, the first of its kind. While there are publishers who are beginning to look at ways to bring aesthetic beauty back to the Word of God, there is no one doing anything like this right now.

¶ The process that I have developed took a substantial amount of time and every step was designed to be produced by one person. It would be interesting to see how this process could be translated to a larger scale production with multiple people responsible for the different steps. A larger press would, of course, be necessary. It would also require an industrial laser-cutter rather than a home unit. The Glowforge was excellent for what

I needed, but its speed would be an issue on a larger scale production. The application of gold leaf would be much more efficient if it was foil stamped instead of hand printed. This would help with some of the registration issues and prevent adhesive from drying on the blocks, and 23-karat gold foil is available on the market.

¶ My visual solution is one way to solve the problem, and I am sure there are many others. It is my hope that this thesis project inspires others to find their own ways to bring beauty back to our shelves in a way that will withstand the test of time, so that future generations may look at our books — our cultural artifacts — and know that the written word was valued and alive in our generation. ■



PROVERBS

2



Wise men, if you
teaching &
command
by paying
wisdom, &

- 1 thought to understanding;
2 even going so far as to beg
& pleading loudly for it
3 if you seek for it like silver
4 hidden treasure,
5 then you will come to understand
6 wisdom, & you will discern
7 For the Lord speaks wisdom
8 source of knowledge and
9 He provides sound guidance
10 a protective shield for the
11 so that he might guard the
12 faithful ones.
13 Then you will understand
14 and upright — & every
15 For wisdom will enter your
16 knowledge will bring you
17 Discretion will watch over
18 will protect you.

Bibliography

- Aly, Islam Mahmoud Mohamed. "Using Historical Bindings in Producing Contemporary Artists' Books." MFA Thesis, University of Iowa, 2013.
- Beck, Arno. *Arno Beck*. www.arnobeck.de. Accessed 4 March 2018.
- Bibliotheca*. www.bibliotheca.co/. Accessed 30 Nov. 2018.
- Bringhurst, Robert. *The Elements of Typographic Style*. 4th ed., Hartley & Marks, 2013.
- Brumberger, Eva R. "The Rhetoric of Typography: The Persona of Typeface and Text." *Technical Communication*, vol. 50, no. 2, 2003, pp. 206–223. JSTOR, www.jstor.org/stable/43089122.
- BonefolderClub. *Etsy*, Stepan Chizhov. www.etsy.com/shop/BonefolderClub.
- Buchtel, John and Mark Dimunation. "H-10. The History of the Book, 200-2000." Rare Book School, 11-16 June 2017, University of Virginia, Charlottesville, VA. RBS Course.
- BookBeetle: Letterpress Printing for the Desktop. Josef Beery. www.bookbeetlepress.com/. Accessed 5 May 2018.
- Chappell, Warren. *A Short History of the Printed Word*. Second edition, revised and updated by Robert Bringhurst. Hartley & Marks, 1999.
- Coldwell, Paul. "Hybrid Practices within Printmaking." *Journal of Visual Art Practice*, vol. 14, no. 3, Nov. 2015, pp. 175-178. EBSCOhost, doi:10.1080/14702029.2015.1094241.
- da Silva, Filipe Carreira. "Following the Book: Towards a Pragmatic Sociology of the Book." *Sociology*, 2015, pp. 1-16. soc.sagepub.com.
- Darnton, Robert. *The Case for Books: Past, Present, and Future*. PublicAffairs, 2009.
- De Hamel, Christopher. *The Book: A History of the Bible*. Phaidon, 2001.
- Eisenstein, Elizabeth L. *The Printing Revolution in Early Modern Europe*. Cambridge University Press, 1993.
- ESV Illuminated Bible, Art Journaling Edition*. Crossway. www.crossway.org/bibles/esv-illuminated-bible-art-journaling-edition-tgl-2. Accessed 30 Nov. 2018.
- ESV Story of Redemption Bible*. Crossway. www.crossway.org/bibles/esv-story-of-redemption-bible-case/. Accessed 30 Nov 2018.
- Flynn, Danny and Flora McLean Vincent. "Laser Cutting for Letterpress." *International Journal of Technology, Knowledge & Society*, vol. 6, no. 6, Nov. 2010, pp. 103-112. *ProQuest*. Accessed 25 Feb. 2018.
- Fujimura, Makoto. *The Four Holy Gospels*. Makoto Fujimura. fourholygospels.makotofujimura.com/. Accessed 22 April 2018.
- Johnson, Edward. *Writing & Illuminating & Lettering*. A & C Black, 1983.
- Kierulf, Caroline. "Printmaking and Multiple Temporalities." *Journal of Visual Art Practice*, vol. 14, no. 3, Nov. 2015, pp. 179-191. EBSCOhost, doi:10.1080/14702029.2015.1094231.
- Kitcat, Lewis. "III. The Bookbinder and the Finished Product." *Journal of the Royal Society of Arts*, vol. 106, no. 5020, 1958, pp. 258–268. JSTOR, www.jstor.org/stable/41366237.
- Mahoney, Jamie. "The Artist's Hand in the Digital Age." MFA Thesis, Virginia Commonwealth University, 2007.
- Morris, William. *The Art and Craft of Printing: Collected Essays by William Morris*. Elston Press, 1902.

“Lot 31. [KELMSCOTT PRESS]. Chaucer, Geoffrey. *The Works of Geoffrey Chaucer*. Edited by F. S. Ellis. Hammersmith, 8 May 1896.” *Christie’s*. www.christies.com/lotfinder/Lot/kelmscott-press-chaucer-geoffrey-the-works-of-5562157-details.aspx. Accessed 22 April 2018.

Ong, Walter J. *Orality and Literacy: The Technologizing of the Word*. Routledge, 1982.

Pearson, David. *Books as History: The Importance of Books Beyond Their Text*. Revised edition. Oak Knoll, 2012.

Schneller, Annina. “Design Rhetoric: Studying the Effects of Designed Objects.” *Nature + Culture*, 10.3 (2015): 333-56. ProQuest. Web. 19 Feb. 2018.

Sennett, Richard. *The Craftsman*. Yale University Press, 2008.

The Saint John’s Bible. www.saintjohnsbible.org/. Accessed 22 April 2018.

The Society of Calligraphers. *Extracts from An Investigation into the Physical Properties of Books as they are at Present Published*. W. A. Dwiggins and L. B. Siegfried, 1919.

Tschichold, Jan. “Something about Book Design (1932).” *Design Issues*, vol. 9, no. 2, 1993, pp. 77–79. JSTOR, www.jstor.org/stable/1511679.

Tschichold, Jan. *The form of the book: essays on the morality of good design*. Hartley & Marks, 1991.







Rachel Dugan

LIBERTY UNIVERSITY | 2018