

Makerspaces: Combining Information Literacy with Pattern Design for Fiber Art through Digital Images

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ABSTRACT

This article shares a practice of using digital images to create patterns for embroidery with aspects of information literacy within makerspaces. The author shares her enjoyment of a fiber art practice born of using digital images to create fiber art patterns from rare illuminated manuscripts. The author suggests that because images from these manuscripts are often considered hidden images, offering a program for pattern design will increase research discovery and opportunities for scholarship.¹ This autoethnography offers one librarian's experience using digital images from rare illuminated manuscripts and the ancient embroidery technique laid work to create colorful fiber copies of musical instruments and musicians for her art piece "The Medieval Screen."² Laid work is documented from the famous Bayeux Tapestry, and fiber copies of hidden images are one vibrant way to display forgotten images.³ The author asks if there will be a significant increase in downloads and views of historical digital images from offering makerspaces to teach this method combined with information literacy.

INTRODUCTION

Due to the coronavirus pandemic, online education in the United States has multiplied and the demands of digital collections have increased (Frederick and Wolff-Eisenberg 2020). From many digital initiatives by archives, art galleries, libraries, and museums, we have gained access to thousands of historical drawings. These artistic images offer educational and historical fodder for more scholarship opportunities. Many higher education institutions rely heavily on digital

resources such as the digital collections found in the National Emergency Library and Hathi Trust (Tranfield, Worsham, and Mody 2020). Digital images offer insight and valuable access to the arts and humanities by sharing historical drawings from human history. As instruction has moved online for most disciplines, libraries are reaching out to inform their patrons and teachers to take advantage of digital resources available within their collections (ACRL Research Planning and Review Committee 2020). This new dynamic has made drawings and artwork from historic documentation, including illuminated manuscripts, even more in need.

Many libraries throughout several countries continue to grow and share their digital collections, and as new technology continues to develop, they increasingly share digital collections and discover interdisciplinary approaches to sharing them (Hutton 2008; Lee 2017). Consider the concept of using digital images to create new artwork to increase our collective memory of human history within art (Gor 2019; Greisdorf and O'Connor 2008). Teaching this concept may be a worthwhile approach to teaching information literacy within makerspaces. Searching the Internet, I was able to find makerspaces that teach sewing and how to use sewing and embroidery machines, but not how to create patterns to hand embroider (North Carolina State University Libraries 2019). Some universities have offered hand embroidery classes within their makerspaces, but not combining the creation of one's pattern from digital images from illuminated manuscripts (University of Georgia University Libraries 2019). Makerspaces that incorporate information literacy create a connection between visual literacy, copyright / fair use, and digital storytelling, just to name a few (Logsdon, Mars, and Tompkins 2017).

The importance of digital initiatives in research heightens when used for artistic measures, combined with research in various subjects such as art, art history, history, anthropology, religion, and languages. Consider that travelers visiting various cities across the world, when

they see art in architecture or sculpture out in the open and easy to see, recognize and imprint these artistic designs with subtle exposure. The author suggests many historic and beautiful drawings are not seen by the masses because they are inside a rare manuscript that hasn't been digitized or, if it has been digitized, much of the human population does not know about the digital form. What would happen if more people were aware of digital collections within rare illuminated manuscripts, often created centuries ago and still written in what are considered dead languages? When these images are brought out of the page or computer screen, to be displayed in fiber, would the exposure increase public inquiry to research these manuscripts? Would seeing these drawings in other artistic mediums pique people's interest to investigate rare manuscripts further? An example is "The Unicorn Tapestries" (Metropolitan Museum of Art n.d.), a total of seven tapestries in the Metropolitan Museum of Art that are sold as posters or tapestries, tins, playing cards, and clothing. Having these images on a mass retail item has made them recognizable to many. Kits have been created and sold for individuals to make their own Unicorn Tapestry. What if they learned that they can create their own patterns based on thousands of other historical drawings?

I suggest that makerspaces offer pattern design for fiber art as a pathway to increase the knowledge of the existence of these historic resources by creating fiber copies of digital images from illuminated manuscripts. Makerspaces are a wonderful way to open the door to a digital initiative that has the potential to introduce many to the world of illuminated manuscripts while teaching a new artistic approach. Teaching pattern design for embroidery projects based on digital images provides opportunities to study information behavior (Koh et al. 2015) and supports information literacy by teaching database or catalog searching of special collections,

locating an image, introducing and understanding public domain, and citing digital images (Logsdon, Mars, and Tompkins 2017).

In this article, I share the procedures I used to create a fiber art piece designed to display fifty-six fiber art images from two thirteenth-century manuscripts. Rare manuscript drawings offer educational concepts to new generations through their historical drawings or paintings. Within the pages of these rare works, they remind all of us of the human journey and prevent us from forgetting many historical events. With each new generation, new history is being developed, and many of the historic drawings from rare manuscripts will possibly be forgotten.

Reintroducing art drawings from rare manuscripts in fiber art not only is fun and creative but can fill a strong educational need. I suggest this approach could impact world languages and cultures by reminding everyone that many of the world's existing rare manuscripts were written in Greek, Latin, Roman, and other dead languages. Any culture can be better understood through historic documentation and illustrations, and fiber art copies can reintroduce us to mankind's journey through history. Think how much cave drawings have taught us about early man; hidden images used as art can reawaken our combined knowledge of our past and enable shared cultural understandings for generations to come.

METHODOLOGY: AUTOETHNOGRAPHY

Pattern Design—The Concept

My passion for digital images is directly related to my appreciation of illuminated images found in medieval manuscripts. I discovered these images as a member of the Society for Creative Anachronism (SCA).⁴ While a member of this society, I competed in the arts and sciences by playing guitar. I struggled to convince judges that playing a modern-day guitar was just as

“period” as playing a lute.⁵ I wanted to prove my point by researching the provenance of the medieval guitar, so in 1997 I began research for an article for the obscure publication *Tournaments Illuminated* (Carmen 1999). This is when I discovered the thirteenth-century illuminated manuscript *Las Cantigas de Santa Maria* while researching in the music library at the University of Colorado–Boulder.⁶ I found many images of musicians with their musical instruments from the thirteenth century and was surprised at the detailed drawings from rare illuminated manuscripts! Many of the instruments had not changed in modern-day form, but remarkably I saw instruments that I had *never* seen before and others I could ascertain were ancestors to some of our common instruments of today. I asked myself, how is it possible I have never heard of this manuscript before? I was fascinated with the medieval drawings from so many manuscripts I was seeing for the first time. What these black-and-white images would look like in color and how these tiny illuminated drawings would look enlarged and in fiber became an obsession to me. As I didn’t weave images, I immediately started seeing these old drawings in fiber and desperately wanted to try embroidery.

I wondered at the time how I would get these images on fiber. Perhaps I could trace them and apply them with carbon paper. The only step I could start with was to begin collecting copies of images from my research, envisioning what these interesting images would look like in fiber. By this time, I was years away from going to grad school to earn my master of library science degree, so scholarship was a foreign concept to me. An SCA friend helped me edit and understand the research process. I gained perspective from the research that those most familiar with illuminated manuscripts are scholars, and this made me sad. I was not a scholar but an amateur researcher, mesmerized by the discovery of historic drawings within the illuminated manuscripts. I understand that many who are not researchers may not be aware of the plethora of

illuminated manuscripts and miss the inspiration I found in these historic and educational resources. The more I learned about medieval manuscripts, the more I wanted to share with the world, not just SCA members but the world, the amazing history I saw in their drawings.

I learned of a new technology that was out in equipment called scanners. I learned it was possible to scan my photocopies and make them larger, and I remembered iron-on-transfer paper was a way to get images onto fiber.⁷ When I asked SCA members about using images from books to scan, I was reassured that *Las Cantigas de Santa Maria* was in the public domain and was encouraged to use the images I found for research for medieval reenactment. However, the images I found were poor in quality, faded, and splotchy, and my scans turned out as poor prints. This caused the initial patterns I was striving for to come out unclear and as poor patterns for embroidery. Eventually, I located two brightly colored images of musicians from *Las Cantigas de Santa Maria* in a book set I had purchased (Catto 1994). With help from an SCA member, we were able to create two clear images to enlarge and print onto iron-on-transfer paper for embroidery patterns. These first patches I embroidered using the split stitch, each of which took me about nine months.

After trial and error with scanning, I was directed to the SCA website, where SCA member Greg Lindahl had created a webpage to teach SCA members about medieval dance. He had the images uploaded as PDFs of the miniatures from many of the cantigas (Lindahl n.d.).⁸ The web page had all the images I was enamored with of the miniatures found in *Las Cantigas de Santa Maria*, currently housed at El Escorial in Madrid, Spain. I contacted Lindahl to make sure it was alright for me to use his digital images. He confirmed that his PDF images on the SCA website were open and free for anyone to use (personal communication with Lindahl 1998).

Las Cantigas de Santa Maria is referred to as a manuscript, but it is made up of several codices. The Escorial Codex J. b. 2, also called the E-Codex, has the most images of musical instruments. They make up illuminated capitals for each song or cantiga and are described as miniatures (Keller and Cash 1998, 1; Montagu 1980; Ribera 1929). The miniatures are quite small, as they were drawn into the beginning letter of the music or poem of the cantiga. Due to the ability to use the rulers in Microsoft Word, and my goal of displaying larger images of these beautiful drawings, I was able to make the images approximately eight inches by nine inches and was pleased at how well they printed out on the iron-on-transfer paper.

Once I had located fifty images on the SCA website, I thought it would be amazing to embroider them all. I would not have been able to create as many patterns to embroider without access to professionally scanned images from the manuscripts I was featuring. Having access to these images was the only way I could have produced this art piece when I had formulated the initial concept. The digital images provided me with a clear and simple process to create large patterns to embroider over. Making copies of historic images appealed to me as I am not skilled in drawing and I wanted to capture what the artists recorded in their time.

From my experience, the access to better images provided by the SCA website availed me the opportunity to create better patterns to embroider, helping my creative process advance more effortlessly. Utilizing cleaner images and downloading them to my personal computer saved me hours in digital cleanup. The availability of images Mr. Lindahl had already cropped and made available to download allowed me to quickly create several patterns to embroider. Because of this experience, I am in favor of more digital initiatives within special collections to provide quality images for further research and creativity.

Images prepared for easy download and identified as in the public domain helped me see an achievable creative product. Finding images in the public domain or under a Creative Commons copyright license gave me freedom to create my own works in fiber. I am hopeful that more libraries with archives and/or special collections will offer ready-made and easily downloadable images from their collections from the public domain or with Creative Commons licenses because easy access may inspire further creative and research projects from more patrons (Needham 2017). Some libraries are already doing this type of work. The Folger Shakespeare Library offers images of heraldry easily used for laid work patches (Folger Shakespeare Library n.d.). They use Creative Commons licensing, explain that no permission is necessary when a creative work is used, and ask that the Folger Shakespeare Library be cited. Another option to continue this service would be to create a LibGuide featuring images from the public domain, as in Northcentral University's "Open Access Resources" page (Northcentral University Library n.d.).

Display

At this point, I realized that I didn't want fifty embroidered patches in frames to hang up, as I didn't have the wall space. Another SCA friend suggested that I create a room divider from recycled bifold doors and use metal hinges to connect the doors, then line the slats with strong material and hand sew the patches on the material.⁹ This would enable me to display several images into one framed piece and function as a room divider, very popular in the Renaissance period. The concept of building a large art piece such as a room divider from images of one or two rare manuscripts was something that interested me, but I wasn't sure how I would have the time to attempt such a daunting venture. I researched the use of room dividers in the Renaissance and became overjoyed with the concept for a similar medieval project within the SCA.

During this time, my mother suffered and died from cancer and I needed a project that would give me something else to focus on as I dealt with her loss. Building a room divider, which I later referred to as a screen, was the undertaking I threw myself into: sanding, staining, and painting the wooden bifold doors.¹⁰ I used trigger material to line the open slates to create a cloth foundation for attaching finished embroidered patches. On one side I attached brocade material with its medieval symbolism, and I wove on an inkle loom to create the trim to frame each patch.¹¹ The inkle pattern was designed by another SCA member, and I used felt to back the thin brocade material to make it heavy enough to be a counterweight to balance the thick embroidered patches and trim on the reverse side.¹² I realized this project was taking years to finish, so I outlined my process in a static blog, *New Medieval Art* (Carmen n.d.). This project was indeed a great comfort to me during my grieving period, and it would again help me to heal later in life.

Once I built the screen in 1997, it measured ten feet high by seven feet wide. It was certainly large enough to display several patches, and on just one side (see figure 1). I chose a theme of musicians and musical instruments from the same period, as I wanted a beautiful and educational piece that people would enjoy looking at and experience a history education simultaneously. Lindahl had digitized images from two illuminated manuscripts, both affiliated with the same ruler, King Alfonso X or the Wise, with musical instruments featured from the same territory and time period, being the courts of León and Castile in thirteenth-century Spain. The manuscripts were *Las Cantigas de Santa Maria* and *The Book of Games*.¹³ The second illuminated manuscript shows musicians playing stringed instruments for people playing chess. I recognized the ability to share with more people the beauty and history found in illuminated manuscripts through this unique fiber art piece!



Figure 1. The first sixteen patches in laid work on “The Medieval Screen.” Image by Julie Carmen.

Laid Work

After complaining to SCA members about the amount of time it took me to create the split stitch patches, I was pointed in the direction of laid work. Part of my research included becoming more familiar with the Bayeux Tapestry. The concept of applying a truly documented and historical embroidery technique to medieval images inspired me. Once I had studied and practiced the simple approach of using back stitch for outlining the image, satin stitch for filling the image, and countercouching over the image, I began laid work on the other *Cantigas* patterns. I timed my efforts specific to the laid work patches, traveling on airlines, busses, and cars, and documented that a patch generally took me four months to finish as a full-time working person, making this project take half the time I put in with the split stitch patches.

Laid stitch is designed to cover large areas and save floss and is a quick way to fill in images with vibrant and colorful floss. Another added benefit is that the appearance of the piece is woven, yet there is no need for a loom, as it is made with needle and thread. This method takes images from rare illuminated manuscripts and places them on fabric, thus freeing the images from the page or the computer screen. These artwork pieces are now available to be displayed

more prominently in public places, such as on walls, movable screens, or pillows, and added to quilts.

My approach with the laid work process includes using recycled materials, the organization of materials for easy travel, and the use of images most of society would not recognize. The fun in creating laid work copies of rare images is in reintroducing history through fiber work. I can talk to people about the images if they ask. Embroidering on a bus has given me many opportunities to tell others about the Bayeux Tapestry and *Las Cantigas de Santa Maria* (see figure 2).



Figure 2. Laid work patch of miniature from Cantiga 120, framed with inkle trim. Image by Julie Carmen.

LITERATURE AND RESOURCES

Literature Review

I found very little in my research about embroidery creation using digital images. I have not located any documentation about embroidery application over digital images, let alone laid work,

within academic journals. Because interdisciplinary approaches to higher education are considered of high impact, I hope this article will be useful to others' research and instruction including computer science technology, the humanities, and information literacy. This technique offered in makerspaces provides a successful educational experience because it includes aspects of the humanities and STEM, which is a tested method for student success (Gleason 2020).

Makerspaces encourage active learning, which aids in students increasing their problem-solving skills and their learning retention (DeWaay 2018). When a student is actively learning, such as using hands to embroider, computer skills for researching an image, and software technology to design a pattern, they are more invested and can develop a personally meaningful association with their art. This association can, over time, become part of their identity (Gorichanaz 2019). When this happens, the learning experience is more effective.

Makerspaces are found in several places around the world, with libraries continuing to add more makerspaces to their buildings (Prato and Britton 2015). The practice of searching for a desired image online, downloading the image, fitting it within a standard-size page, and then printing it out on iron-on-transfer paper involves aspects of both computer science and information literacy. The finishing touch includes cutting the image out on fabric with pinking shears, so that a student or user can leave the makerspace with a pattern to embroider. In addition to the pattern design, the fiber art project within a makerspace would include looking for the proper citation of the image holder, research on the manuscript the image came from, and an introduction to fair use law, the public domain, and Creative Commons licenses. Information literacy is the driving force behind this artistic approach, which supports lifelong learning (Fernandez 2017; Fourie and Meyer 2015; Garcia 2019; Lee 2017).

As stated above, laid work is well known from the Bayeux Tapestry, a fiber art piece 220 feet in length and 20 inches tall. It depicts the Battle of Hastings of 1066, is made with wool thread on linen, and appears woven, hence the reason it is described as a tapestry (Grape 1994). Should a makerspace teach hands-on laid work, learning a technique directly documented from a historical relic such as this tapestry would surely offer a unique connection to history. Fun facts about the Bayeux Tapestry include that the art piece is not woven, as the linen cloth can be seen throughout the imagery; the background of the linen is used to provide the color for hands and faces, which makes all persons in the story line look pale; testing results show that tapestry drawings were made with lead on material (Bloch 2006, 88); and that no one knows for sure who ordered the tapestry. One theory points to Odo of Bayeux, half brother of William the Conqueror (Grape 1994, 23–54), and another theory holds that the tapestry was ordered by William’s wife, Matilda of Flanders (Bloch 2006, 42–44). Although who embroidered the tapestry is unknown, several people over several years likely created the fiber art (Bloch 2006, 89–94; Grape 1994, 62). Another theory is that the Bayeux Tapestry was created to be hung in a castle and not a church or was created to be hung in multiple places, at multiple events, and even outside (Bloch 2006, 40–41).

Information literacy aspects within a makerspace include teaching search methods with a known title, location, or date to find a manuscript of interest. Some interesting databases are continuing to develop every day, such as the Digitized Medieval Manuscripts App or DMMapp (Menna and de Vos n.d.) created by Giulio Menna and Marjolein de Vos—aka the Sexy Codicology Team. This database offers opportunities for access to study many manuscripts without traveling. Information literacy teaches the citation of digital images, which strengthens the interdisciplinary approach within the pattern creation process (Matusiak 2013).

Within the United States, libraries are continuing to grow their digital collections, increasing online exhibits and catalogs to access the images. Some rich resources include the Digital Scriptorium, a consortium of American libraries and museums that make their collections of premodern manuscripts free for online access (Digital Scriptorium n.d.), and New York City's Morgan Library and Museum, another fantastic resource. They have a remarkable digital collection of "Medieval & Renaissance Manuscripts" (Morgan Library and Museum n.d.). The J. Paul Getty Museum, located in Los Angeles, and their website, the Getty, have made millions of images accessible in their collections (Getty n.d.-b.). Reading about their Open Content Program shows the value and understanding many people place on their heritage, culture, and growth via the resources they make available (Getty n.d.-a). The Getty Research Institute has unique preservation projects including cave drawings such as the "Cave Temples of Dunhuang: Buddhist Art on China's Silk Road" (Getty Research Institute 2016). I encourage fiber copies of rare drawings, including cave drawings, from the digitized images. Through my studies as an archivist, I was continually taught to make several copies of items, such as digital, print, and born-digital (Robertson and Borchert 2014). A familiar saying among archivists is "lots of copies keep stuff safe," and in this context I think fiber copies could be added.

There are several digital collections in Europe, and I will list just a few here: the University of Oxford, located in Oxford, England, which offers its "Digital Bodleian" from the Bodleian Library (Digital Bodleian n.d.); the British Library, located in London (British Library n.d.); the Bibliothèque nationale de France (n.d.); and the National Library of the Netherlands (n.d.). All have remarkable digital manuscripts to page through virtually. My usual practice is reading the resources' guidelines for use before downloading an image.

One more amazing online rare collection I want to mention is the Vatican Apostolic Library. As one searches the digitized manuscripts from the Vatican, it is easy to flip through each manuscript, page by page, and the drawings within these pages are incredible. It would appear one could crop an image from a page and create a pattern to embroider. However, on every page on this website, the Vatican strictly forbids anyone from using text or images from any of the digitized pages without contacting them first. In this situation, I would suggest anyone interested in using their collections in research to contact them. If an image in the Vatican's collection is something that appeals to a user to use as a derivative artwork, consider looking at other manuscripts from other special collections to find similar images first. The user may be surprised by what can be found in the plethora of digital images available today. Or if the image is the item the user really wants, they should just contact the Vatican; they may be easy to work with, and if they are familiar with laid work and recognize the fiber copy is not an exact copy, they may grant permission. If this library were to see the merit of how much their special collections would be cited and attract more researchers, they may reconsider their permissions and use laws in the future.



Figure 3. Laid work patch of miniature from Cantiga 400. Image by Julie Carmen.

Resources

When first reading about the Bayeux Tapestry, I didn't get the full visual of what it looked like until I found some video footage of the actual artifact. Fun virtual resources about the Bayeux Tapestry are on YouTube, such as video tours of the tapestry through BBC One (2009) and another one by Rick Steves (2012). Many people have placed footage on YouTube to share their viewing of this priceless artifact. An interesting find on YouTube is "The Animated Bayeux Tapestry," which shows all the tapestries with background noises as an animation (Potion Pictures 2009). Online tutorials to learn more about the tapestry include Khan Academy's "The Bayeux Tapestry" (Tanton n.d.) and the Reading Museum's "Britain's Bayeux Tapestry at Reading Museum" (Reading Museum n.d.).

Fiber artists are continually finding ways to create fiber art from images from our past, such as with Kirk Dunn's application of knitting of stained glass imagery (Ergo Arts Theatre 2018), the creative teachings of Chantel James in her shop specific to teaching laid work (Bayeux Broderie Chantal 2014), and the impressive members of a church who have embroidered over a half-mile of church pew covers of images from the Bible (Oregonian 2019). This commendable group project, created by members of the Westminster Presbyterian Church in Portland, Oregon, and found on a YouTube video, had embroidered over a half mile of pew cushions since February 2019. I ascertain from the video that they used cross stitch, which, unlike laid work, is a precise technique.

As one explores the many digital collections available, it would be convenient to add these resources to a research guide to help makerspace users explore more digital images. In the spirit

of supporting their patrons in finding great resources of digital images within various digital special collections, libraries continue to put together helpful research guides, or LibGuides, from the software they use to develop the guides. From an initial keyword search using “LibGuides” and “Rare Manuscripts,” I found many libraries not only created LibGuides to direct users to their special collections but also pointed users to other like collections for open access. Cornell University Library’s “Rare and Manuscript Collections” LibGuide directs users to the plethora of digital collections within its own collections (Cornell University Library n.d.). Denison University Libraries’ LibGuide on “Medieval Manuscripts” not just shows their digital collections but offers suggested sites to visit (Denison University Libraries n.d.). Fordham University Libraries’ LibGuide “Medieval Studies: Manuscript Studies” suggests sites to find more rare manuscripts, with some of the catalog records containing links within the record for more information per set of images. This information is helpful as many of the manuscripts are in Latin or other ancient languages (Fordham University Libraries n.d.).

The Illinois Library’s LibGuide titled “Medieval and Renaissance Studies: Manuscripts Online & Catalogs” not only lists great online resources to find digital images but also offers countries in alphabetical order, with repositories listed per country in alphabetical order (Illinois Library n.d.). The University of Chicago Library’s LibGuide “Guide to Medieval Manuscript Research” breaks down its content to three main pages: locating manuscripts, working with manuscripts, and the Digital Middle Ages. The text and direction form a unique approach to help users find the digital images they need for their research (Bruhns 2019).

The University of Iowa Libraries’ LibGuide “Early Manuscripts at Iowa” is developed to help users find their collections within the Iowa Digital Library Early Manuscript Collection and outline coursework for two classes: Medieval Manuscript (MsC0542) and Asian Manuscript

Collection (MsC0913). The guide educates users about their digitization progress, explaining it is ongoing, and as such, the guide will continue to evolve, giving some manuscripts more complete descriptions than others (University of Iowa Libraries n.d.). The University of North Carolina's LibGuide "Illuminated Manuscripts: Resources and Facsimiles" was created specifically for scholars researching illuminated manuscripts. The art librarian has suggested books for users to read about research using illuminated manuscripts, embedding other LibGuides for further resources, including a LibGuide tutorial on using Photoshop (University of North Carolina n.d.). As one can see, the use of illuminated manuscripts is a growing passion for many, and what a nice addition to add fiber art to these amazing images to further the knowledge of many.

If considering teaching the laid work process, here are some fun and helpful resources in the form of online tutorials. Demonstrating the laid work technique with easy-to-access tutorials is effective in learning the process. YouTube tutorials include "Bayeux Stitch Tutorial" with Chantel James, demonstrating her work as she teaches in her workshop, Bayeux Broderie. As she explains the stitches, there are accompanying drawings that pop up as she is working on it (Bayeux Broderie Chantal 2014). Sarah Homfray Embroidery shows her process for laid work titled "'1066 and All That'—Bayeux Stitch (Straight) Embroidery Tutorial." Note that the sound is a bit soft, so turn up the volume if viewing (Sarah Homfray Embroidery 2017). A PDF tutorial not on YouTube but uploaded by the Embroiders Guild of America (EGA) is a tutorial written by EGA member Jan Messent; it really describes the technique well while offering images of the work (Messent n.d.).¹⁴

A quick image search to get a user started to locate images they may want to embroider is to simply go to the website Pinterest. When using Pinterest images, I teach to look up where the image is housed by looking for the institution that houses the original manuscript and then

accessing their website for the terms of use. I also look for an attached Creative Commons license to the image. Public domain items are sometimes tricky to determine, so using archives, libraries, and museums that make their images freely usable for creative works is a great thing to keep in mind (Needham 2017). Many images I identified on Pinterest that would make interesting laid work patches I put on my Medieval Research board on Pinterest (Pinterest 2019). On this Pinterest board, I have not checked to make sure all metadata are entered correctly, so don't forget to check who owns the image and where the original manuscript is from for citation. This board is just an example of the many images I think would be a great fit for laid work and fiber art copies.

Get in the habit of citing the creator of the image and the institution that owns the original manuscript. This is all necessary information to cite credit where credit is due and will give those interested in reading about the manuscript the necessary information to find out more about the manuscript. I learned this valuable approach when I took a massive online open course (MOOC) from Coursera, "Deciphering Secrets: The Illuminated Manuscripts of Medieval Europe" (Coursera n.d.). For my project in this course I created a Pinterest board in which I had to use proper citation of the manuscripts I identified. I found many on Pinterest were not doing this step and often the information about images was incorrect.

RESULTS

I have identified the idyllic match of using digital images with iron-on-transfer paper to design patterns for embroidery applications, more specifically, laid work. I have reached out to more people about this digital technique through educational approaches in the past six years, beginning with a poster presentation at the Symposium on University Research and Creative Expression, an annual conference hosted by the Office of Undergraduate Research at Central

Washington University, on May 21, 2015 (Office of Undergraduate Research, Central Washington University n.d.). I requested the poster be made available in the university's institutional repository, Scholarworks, as "The Medieval Screen: A Work in Progress" (Carmen 2015), which is open access and freely accessible to the world. I also presented virtually at Inertia: Momentum, a Conference on Sound, Media, and the Digital Humanities hosted by the University of California, Los Angeles, on April 28–30, 2016. The presentation was titled "The Medieval Screen: Reuse, Digital Humanities, Art, and Sound," and the presentation seemed to raise questions of how more people could learn about this artistic focus to enhance scholarship about historic illustrated manuscripts similar to *Las Cantigas de Santa Maria*, with one graduate student contacting me via email to ask more questions (Carmen 2016).

On August 9, 2019, I presented at the Pacific Northwest Library Association (PNLA) 2019 conference in Spokane, Washington, with a presentation titled "Digital Humanities Reawakens Ancient Embroidery Technique" (Carmen 2019a). I asked the audience if they thought a program for pattern design and laid work instruction would be a good fit for their communities or libraries. This was a small group of about twenty, and with a show of hands, half of the attendees responded they could see this technique as a potential program. From the attendees at the PNLA conference, I found few had heard of laid work, though some knew of the Bayeux Tapestry. After the presentation, I was approached by attendees stating they found the use of digital images combined with fiber art an interesting concept to add to their makerspaces. I highlighted tutorials and the abundance of digital resources available making this method quite easy to teach, emphasizing that this approach does not require the instructor to be a laid work specialist.

After this presentation, I presented a webinar through the Association for Information Science and Technology (ASIST) about teaching how to create an embroidery pattern using digital

images. After the presentation, a small survey was sent out to the nine attendees. One of the questions included if a makerspace for a fiber art project using digital images would be a good fit in their library, with a 50 percent response that it would. These responses from the webinar, although small in numbers, give insight to the possibility of real interest in using the pattern design technique in makerspaces. In addition to presentations about pattern design for embroidery, I have contributed several articles to the ASIST Special Interest Group for Arts & Humanities (SIG AH) newsletter, including “Exploring Digital Images, New Art, Public Domain and Fair Use” (Carmen 2019b). I also taught a webinar for ASIST, hosted by SIG AH on August 29, 2019, titled “The Medieval Screen: How Digital Humanities and Embroidery Reawaken Rare Illuminated Manuscripts” (Carmen 2019d).

On August 31 and September 1, 2019, I demonstrated and taught laid work at the Kittitas County Fair in Ellensburg, Washington (MyEllensburg 2021). I wanted to see how the concept of designing a fiber pattern for embroidery would be received from a small subculture such as an agricultural population at a county fair. I had a table on which I used a laptop with a PowerPoint slide show loop showing the pattern design process and displayed a book showing illuminated manuscript images and two laid work projects. While at the table, I also demonstrated laid work. I was there for two hours each day, keeping track of the number of people I spoke with and their responses to two questions I asked each of them. Out of the seventy people I spoke with, no one had ever heard of laid work, knew of its woven look, or knew how easy it was to accomplish. One person I talked to knew about the Bayeux Tapestry and had seen it in person. Out of these seventy people, about twenty-five wanted to know more or would be interested in trying this technique themselves, and they seemed shocked this was the first time they had heard of this process. They enjoyed the slideshow, which introduced images from digitized manuscripts

available through the Internet. This experience has demonstrated to me how finding opportunities to teach this old technique, combined with new technology, is an important narrative and should be shared often.

I am searching for funding to create a traveling exhibit of “The Medieval Screen” in order to expose more people to this intriguing technique. Through the preparations for gathering solid information for grant applications, I have uploaded all the images of my patches onto Ravalry.com (n.d.), which is mostly used for those who knit or crochet. Anyone can access Ravalry.com, but in order to see people’s projects users must create their own free account. Those who want to view my patches and see what I have been up to will need to follow jcarmen and look under the “Projects” tab. I have also created a tutorial titled “Introduction to Laid Work” that has three other tutorials embedded within it to teach my entire process of laid work, which I intend to share in multiple online networks (Carmen 2019c).

Laid work itself can be taught in a makerspace, but due to pandemic concerns at this time, a better project to offer in the makerspace would be to focus on the technology to create a pattern. Anyone can embroider a pattern the way they wish, and those who want a woven look can opt to learn laid work. Makerspaces can give handouts with online tutorials to help with the actual laid work process if there is no instructor available and the makerspace is not equipped to offer hands-on embroidery training. Because I have not created a makerspace nor worked in one yet, I will continue to offer online workshops and tutorials to get the concept out. I am hopeful that archives, libraries, and museums will develop a pattern creation option in their makerspaces. Only when and if they do will we see if there is a significant increase in digital research using digital images.

DISCUSSION

I suggest that teaching pattern design for embroidery is a natural fit for makerspaces. They can provide the equipment and technology needed to design a pattern for embroidery. Laid work does not have to be taught initially, but it is an added educational option to give to users. Should users choose to learn and adopt the laid work technique, makerspaces can provide educational resources about this historical method. If just the pattern design were to be embraced by academia, countercultures, or underserved populations, these institutions could be inundated with demand for printing, ironing, and computer needs to create patterns.

For laid work, developing an understanding of an embroidery technique from a historical artifact such as the Bayeux Tapestry is something I personally experienced and gained strong inspiration from. From the experience of practicing laid work, I wanted to develop a familiarity with the Bayeux Tapestry in order to understand the provenance of the embroidery stitches. I found this useful while practicing laid work as I connected with the history of the tapestry as well as the history of the manuscripts the images came from. I encourage libraries, archives, and museums to adopt this educational process within their makerspaces because the educational experience will impact many users in their search for creativity, computer skills, and overall enjoyment of a new pastime. I receive many enthusiastic and astonished responses from individuals of various ages, from all walks of life, and from several states when they see the laid work patches I make. They sometimes offer to buy a patch from me, and I explain that it is difficult to know how to charge for a design that has taken nearly a hundred hours to create. I am often asked if I purchased a kit to make these beautiful patches, and people are incredulous to learn I created my own pattern. This has proven to me that there is an untapped resource for new creativity, waiting to explode through the digital collections that continue to grow on the Internet and through special collections of digital images.

As the concept of the digital project using digital images to design embroidery patterns for a makerspace became clearer to me, I asked myself, what would a makerspace for pattern creation look like, and how would it include information literacy? I developed online tutorials using Microsoft Sway, which enabled me to share the online tutorial via a web link. I was able to upload video demonstrations of my pattern creation process, images of finished patches I created, and websites with more resources for making a pattern. From this process, I realized that many people may not have a scanner, printer, computer with software, or even an iron and ironing board in order to create these patterns. This realization helped me understand that there needed to be avenues to teach this process other than a formal class, such as a makerspace.

In September 2012, I visited the Trinity College–Cambridge Library in Dublin, Ireland, and I saw thousands of rare manuscripts on their shelves. The tour guide informed us that the library offered community presentations by archivists reporting on discoveries made in the rare manuscripts they were working on. I asked if any of these presentations were available to be seen on YouTube, and he just laughed and said, “YouTube! That’s just for talking cats!” I realized the opportunity that archives, libraries, and museums have for filming educational archival discoveries and sharing these videos on social media. If they are digitizing their rare manuscripts, they can announce to the audience upcoming digital collections that can also be shared with the world.

Within the makerspace experience, another aspect of information literacy would include helping users understand who owns the image and if it may be used as a derivative artwork.¹⁵ The educational opportunity to teach an overview of simple rules about copyright, fair use laws, and public domain becomes apparent. For a makerspace, a simple approach to teaching how to identify if an image is found in the public domain, if it has a Creative Commons license, or if

there is a need to ask for permission is a good start (Needham 2017). Handouts could be given that could include research guides or websites to give more copyright information, as well as solid resources to find more illuminated manuscripts as possible patterns.

From my own experience of practicing the art of laid work, I can report many benefits of this art form. Laid work is:

- Easy to travel with, especially as I precut and presplit floss for easy packing to take with me on my travels or commuting to work.
- An opportunity for group projects: The approach of laid work can be easily incorporated by groups or organizations wishing to create their own fiber art wall or movable screen should they want to focus on a specific theme, manuscript, or time period. Due to the free style of laid work, projects like this can easily be made from digital images. As Chantal James so clearly describes her experience with laid work, “It is a good fit for me because it is fast and even, and does not require to be precise. . . . Compared to other techniques, The Bayeux Stitch quickly fills large areas and gives wonderful opportunity to be creative. . . . Stitching with this technique is never dull, movement is achieved not only through the drawing but also through the stitch” (Bayeux Broderie Chantal 2014). I predict group fiber art projects will grow as more people discover illuminated manuscripts online and design their own patterns from the digital images. A large fiber art project was how the Bayeux Tapestry was created, with many hands focused on the same project. Digital images offer cultural opportunities to educate about anyone’s heritage through historical resources; laid work offers beautiful formats to enhance historic drawings; and iron-on-transfer paper brings the two together.

- An opportunity for recycling: I used “The Medieval Screen” project as an opportunity to practice recycling by using recycled bifold doors for the screen frame and recycled window drapes for the patch fabric.
- Healing with brain, eyes, and hands: From 2015 until recently, I have undergone several surgeries, requiring weeks of stay-at-home recuperation. Due to these multiple surgeries and recovery times, I was able to relax with the embroidery project and focus as my body healed. I can report that my doctors, specialists, and surgeons all commented on my speedy recovery and positive attitude. When they saw my laid work patches, they all enthusiastically commented that the embroidery was likely helpful in my healing, especially from brain and eye surgeries. I can attest it also helps me relax and have a more positive outlook on life.

Laid work can offer other benefits such as creating gifts for family and friends, developing new skills, reenergizing oneself through new creativity, and healing through creativity.

Laid work will be challenging for many possible artisans, as the process is still slow even with the laid work approach, and the beautiful weave result takes hours to accomplish. Those who practice this method of embroidery find it quite satisfying and never tire of the expressions from others looking at the beauty of the stitches. To create successful makerspaces to design embroidery patterns, there is a need for more readily accessible images within the public domain (Needham 2017). The pattern design technique offered in makerspaces could make an impact on the reemergence of embroidery through a new appreciation of illuminated manuscripts, digital images, and even the ancient embroidery technique of laid work. I would celebrate laid work becoming as practiced as crochet or knitting as a favorite pastime.

For over twenty years, my focus has remained constant to embroider the patterns from the thirteenth-century manuscripts and add each completed patch to “The Medieval Screen.” I often would take a finished patch into work to show colleagues before it was sewn onto the screen. Having people touch or hold a patch has been an educational experience for them and gives me much pleasure when I see their appreciation of the fiber art.



Figure 4. Laid work patch of miniature from Cantiga 140. Image by Julie Carmen.

CONCLUSION

Libraries are in a unique position to offer makerspaces to teach a new technique, utilizing the special collections available in their library. Teaching pattern design for fiber art through digital images is an interdisciplinary approach that includes art, citation practice, copyright / fair use research, digital images, and special collections research (Logsdon, Mars, and Tompkins 2017). I show the remarkable opportunity to create new fiber art from digital images and how this process can and should be offered in makerspaces. The only way to measure the effect of teaching pattern design with digital images is data that show an increase in the numbers of views and

downloads of rare manuscripts and makerspaces that document their use from this digital initiative as indicators. Hopefully, fiber artisans will share their work and we will see more embroidered copies of historical images on social media as this wonderful pastime is experienced by the masses. It would be extremely satisfying to me if this pastime were to become as popular as crocheting or knitting.

With images blown up with the help of digital technology and put in fiber form for further scrutiny, the process offers people further insight to history. Likewise, those who are practicing embroidery will reap the benefits of healing, calmness, and creating something beautiful. The use of digital images offers many ways to expand the image, giving an added advantage to studying the minuscule drawings found frequently in rare manuscripts. Putting these enlarged images into a different art form can also give new perspectives to human history.

I have explained how the laid work technique is a nearly perfect approach by embroidering over images from illuminated manuscripts, especially the older, more simpler drawings. Laid work is great for these images as it covers large areas and gives a woven effect. Using the digital images from illuminated manuscripts offers an opportunity to study historic drawings from any culture, country, or tradition while applying an embroidery technique that was practiced over centuries.

From my own experience I can attest to the simplicity of applying the laid work technique to transferred images on fabric. The simple drawings from rare illuminated manuscripts help to make the laid workflow easier. Applying fiber to these drawings adds a rich texture that gives the image new life on fabric. Laid work over historical drawings makes this a simple and satisfying creative approach. It allows the freedom to create fiber copies of one's favorite images from rare illuminated manuscripts. Because it fits easily in a purse or backpack, it can be taken just about everywhere, providing a special woven result without packing a loom too. My specific practice

in laid work includes using recycled materials and features images from rare illuminated manuscripts. I should mention that this approach does not have to be with illuminated manuscripts, but it has been my experience that the simpler the drawing, the better.

The simple drawings from rare manuscripts are key to how the laid work technique gives the tapestries voluptuous texture and vibrancy. However, why stop there? Cave drawings, preserved in digital form, would also lend the opportunity to create more copies of these historic drawings. Look to your local libraries, archives, museums, or any institutions with special collections for historic drawings to make fiber copies. Those who can draw well can scan their drawings, print on iron-on-transfer paper, and have a pattern to embroider over on fabric. Laid work is just one embroidery technique, but in this case it tends to be the perfect match due to its consistency over large areas with a woven result.

Studying artwork over the centuries is compelling, such as comparing changes in flora and fauna over time and the variety of fantastic beasts drawn in many manuscripts. Due to the many free access images available, I reflect on the endless possibilities of creating fiber art from these digital images. If a person or group has a goal of creating a multiple-image project such as a screen, the educational focus could be on one specific manuscript or on comparing drawings showing the changes in flora or fauna over the centuries. The subject themes of embroidering images from history onto fabric are endless.

The more people become proficient in laid work by using drawings from rare illuminated manuscripts, the more educational insight will be shared with all of us. By combining digital images with an artistic format such as laid work, the work itself will provide a personal familiarity to the artwork as one is stitching it. From my own experience, as I work on an image from the past, my curiosity about the time the image was drawn, the subject itself, and the artist

who created the image grew leads me to research more about the manuscript the image is from. I believe that others will have a similar experience. I appreciate the ability to take a digital image from an original tiny image drawn in a manuscript and make that image much larger through Microsoft Word. The drawing, seen in a larger context in fiber, can increase others' curiosity about the subject when it is seen hung on a wall or displayed on a pillowcase or in a quilt.

Will the increase in awareness of this embroidery technique increase the knowledge and use of rare manuscripts? I believe it will, especially if there are online tutorials, makerspaces, and workshops teaching the concept with information literacy. It must be that when a new artistic concept is introduced and practiced by many, there will be an uptick of results of new artwork. Makerspaces can promote more use of digital images from special collections by teaching pattern design to help anyone make one's own pattern for fiber art. When the ancient embroidery technique of laid work is shared with more users, there will be some that will embrace this historic technique and others will not. Will more archives and special collections begin making some of their special collections more easily accessible to artisans by cropping images specifically for easy derivative creation? I certainly hope so, because as I have experienced, if I didn't have great images to create my patterns, "The Medieval Screen" may not have ever been created.

It is my goal to increase the public knowledge of digital images from illuminated manuscripts and share one way of using these images to create fiber art. I believe this creative approach in using digital images can be effective to increase the use of makerspaces, educate about art or art history, and use information literacy to tie all aspects together. However, I have not had the opportunity to teach this technique in a makerspace. Before the onset of the COVID-19 pandemic, I was invited to teach workshops in a local museum; at this time, any workshops will

be on hold until we can meet in person. I am working on Sway tutorials as one method to teach laid work and design patterns with digital images through social media.

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¹ Those images not seen or known by most people are known as hidden images; they are not accessible to anyone other than the person or institution who owns them.

² Laid work is the embroidery technique documented from the Bayeux Tapestry, using stem, satin, and couching stitches.

³ The Bayeux Tapestry is a large fiber art piece created in laid work, approximately 20 inches in height and 220 feet long. The scenes in this embroidered piece depict the Battle of Hastings of 1066 with words in Latin and images from Aesop's Fables.

⁴ The Society for Creative Anachronism (SCA) is a medieval reenactment club whose members study and re-create medieval events, document their research, and compete in arts and sciences.

⁵ "Period" is the term used to describe an extended span of time, such as a historical era. Description could be used in describing clothes or the type of music played in the SCA.

⁶ *Las Cantigas de Santa Maria* is a manuscript charged by King Alfonso X of Castile-León (1252–84) that depicts miniatures within the musical scores of musicians and musical instruments.

⁷ Iron-on-transfer paper is a technology that allows printed images on paper to be ironed onto fabric. It allows an image to be moved from one place to another.

⁸ A miniature is an illuminated painting within a manuscript, sometimes in the first capital letter of the page. *Cantiga* is the Spanish name for song, or the Galician-Portuguese lyric, and is referred to in *Las Cantigas de Santa Maria*.

⁹ Bifold doors are interior or closet doors, generally wooden with slats to allow airflow.

¹⁰ A screen is the area in a medieval church, also called the choir screen or chancel screen, that served as a partition between the chancel and nave. Illuminated tapestries were often laid over these areas.

¹¹ An inkle loom creates one-inch-wide strips or bands of woven cotton and is considered “period” in the SCA.

¹² Felt is a nonwoven fabric made of matted, compressed animal fibers or other matted fabric resembling it.

¹³ *The Book of Games* is a manuscript charged by King Alfonso X Castile-León (1252–84). It is located in the library of the monastery of El Escorial near Madrid, Spain, and depicts miniatures of people playing three types of games: backgammon, chess, and dice.

¹⁴ The Embroiders Guild of America is a 501(c)(3) organization, originally established in New York in 1958 as a branch of the Embroiderers’ Guild of London (established 1906). EGA came into being when the group withdrew from the London Guild in 1970.

¹⁵ A derivative work is a new, original work or product based on an existing work.