

ABSTRACT

UNIQUE EMOTIONAL ATTACHMENT TO ANALOG BOOKS OVER DIGITAL ALTERNATIVES

by Mark Angelo Cela

Since Apple introduced the first widely-adopted smartphone in 2007 and tablet in 2010, books have undergone a transformation. Entire home libraries may be digitally stored on personal media devices such as Amazon Kindles or iPads, which may be physically no larger than a single trade paperback. While e-books were regarded as revolutionary at their inception, many bibliophiles have rejected digital formats in favor of keeping physical books. Since 2015 e-book adoption has fallen behind hardcover book sales in several Western countries. A format that was once heralded as the death knell for paper books is now struggling to compete with them. This research examines why people are so uniquely attached to physical books when there are seemingly progressive digital alternatives. The answers relate to how humans view objects, and how they perceive them as inherently possessing meaning. Bibliophiles view physical books as objects that represent memories of places, times, and relationships in addition to the content of the book. Additionally, the research examines how publishers could design e-books to facilitate the types of attachment and memory-making so closely associated with physical books. Bibliophiles reject current e-books because they possess no physical or digital properties that have memory-making permanence.

UNIQUE EMOTIONAL ATTACHMENT TO ANALOG BOOKS OVER DIGITAL
ALTERNATIVES

Thesis

Submitted to the
Faculty of Miami University
in partial fulfillment of
the requirements for the degree of

Master of Fine Arts

by

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Miami University

Oxford, Ohio

2018

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This thesis titled

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College of Creative Arts

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Dedication

I would like to dedicate this to my wife and sons who have always been supportive of my pursuits both academically and otherwise. I could not have accomplished this without your support and love. This is for you.

To all of my past students who helped me understand how much I love teaching, and for those who later became lifelong friends I also dedicate this to you. To all my friends I couldn't have done it without your support.

To Dennis Cheatham, you made graduate school what I had always hoped it would be. You were always encouraging while upholding the highest of standards. Thank you.

Last, the late Elizabeth Sims, who was always there for my education. I couldn't have asked for a stronger or more encouraging mother-in-law. You were the best.

Acknowledgments

To all the people who I went through graduate school with, you were amazing. Andrea Mateus Forero you were always an inspiration and someone whose work ethic I admire greatly. Thanks for your friendship. You made a daunting task much more enjoyable. Thanks also to Yashodhan Manke for your input on projects and the encouragement that I could get through these assignments. Thanks for your friendship.

Special thanks to my Thesis Committee:

Dennis Cheatham, Erin Beckloff, and Eric Hodgson

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Chapter 1:

INTRODUCTION

There is something remarkable about the written word and the ability it has to convey concepts such as time, place, and emotional context. Books can be informative, entertaining, and sacred. Books can be used to incite people to action, or to coax them to refrain from conflict. They can be used as an identifier illustrating both who we are and who we desire to become. Children sleep with books in their beds and adults proudly display them on shelves in their homes.

With the release of the first iPhone in 2007 and the first iPad in 2010, Apple ushered in a new age of personal computing. With the proliferation of personal media devices such as smartphones, tablets, and e-books, more people have begun to consume the written word in digital format. Modern content delivery devices may hold dozens or hundreds of books at a given time, allowing readers to carry an entire personal library with them. While these devices have gained in popularity, there is a vocal subset of readers who refuse to adopt the e-book.

The focus of this research is an attempt at understanding the unique attachment people have to analog book formats over the digital alternatives. The research suggests that there is more to a book than the content of the information. The physical presence of a book has varying effects on people, ranging from a representation of self-image, to an object which incites vivid recollections of specific moments in time for the reader. For these individuals an analog book is about more than the story or information within the pages. A book becomes an identifying component of who they are. This study is about those individuals.

So why do people develop unique attachments to physical books over the digital equivalents, and what is the perceived importance of owning a physical book? Why does this tendency appear across cultures, continents, and age groups? Why are books more than just ideas conveyed with words?

A core component of this research is to establish parameters by which people define personal value and ownership of books, and how the perception of physical books differs by comparison to electronic books. This data matters to writers, publishers, graphic and product designers, as well as educational institutions changing to an electronic library. My goal is to arrive at data that will assist these individuals and institutions in understanding why consumers choose analog alternatives to digital media, and what factors to consider when designing or presenting a digital equivalent.

The population for this research was defined as individuals over the age of 18 who are involved in reading at least one book per any given month. Participants did not have to complete a book per month, but rather be actively involved in reading one. Through online surveys and face-to-face interviews, the study reached 184 participants from around the world.

The term analog, or physical book, is used throughout the research to refer to printed, bound, and published materials with the intent of being sold as a book. This does not refer to digital materials printed by the reader. There are instances where the concept of printing digital information for consumption may be discussed, but these instances are separate from the definition used to indicate an analog volume.

The term electronic book, or e-book, is meant to describe an electronic version of a printed book that may be consumed via a computer, mobile device such as smartphones and tablets, and dedicated e-book content delivery devices. An electronic book may be considered a file downloaded to one or more of these devices, or an electronic book presented for consumption through a website.

What the research data indicates is that books mean far more to readers than simply the content expressed through the writing. Physical books are cultural artifacts that identify individuals as belonging to a specific intellectual group. Readers use books to identify one another, start conversations, and build relationships. They associate books with people who have strongly influenced them, or events in their lives that occurred while reading.

Publishers have had a difficult time with bibliophiles. Many readers express a sincere distaste for e-books, and while initial sales of dedicated e-book readers were strong sales have been in decline since 2015. Why do people have such a unique attachment to physical books? The following research points to many different answers to this question.

Chapter 2:

LITERATURE REVIEW

The way that people consume media has changed greatly since 2007. With the advent of media consumption devices such as the Amazon Kindle and Apple iPhone, standardization of electronic reading formats brought electronic books to a wide audience. Today consumers may read electronic books across a wide variety of mobile platforms and can carry hundreds of books with them wherever they choose. However, there are many individuals who choose to remain loyal to analog, printed, books despite these advantages. These bibliophiles attribute many reasons for their love of the printed word, some claiming the tactile nature of the format, others the odor of old paper, and some the idea of an easily shareable format that never runs out of battery and does not require an internet connection to access. The following literature review indicates that while these factors may be part of the reason, there are physiological and psychological factors that are often left unconsidered. People become attached to analog books for more reasons than preference. There are innate human factors that foster the attachment.

Theoretical Framework

The framework for this research begins with Diffusion of Innovation Theory. This theory developed by E.M. Rogers (Rogers, 1962) outlines different technological adoption patterns by consumers. Innovators of electronic books predate modern widespread format standards, and these individuals were more interested in the possibility of the technology than the content. Early adopters embraced the idea of new reading devices and the possibilities of the format for wide consumption.

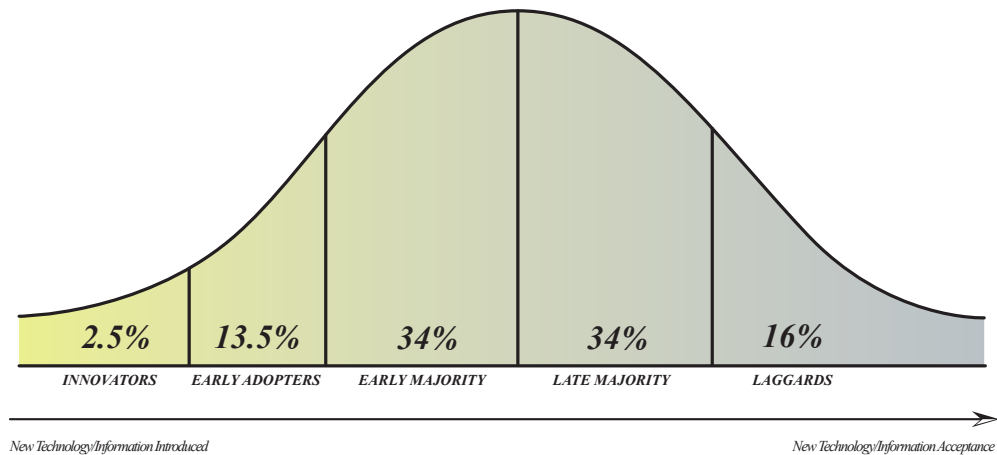


Figure 2.1 Diffusion of Innovation Theory (Rogers, 1962)

In 2018 when this research was conducted, electronic book users fell into the early majority, and this stage is where books and electronic books begin to show a differentiation to other competing technologies. Unlike format changes such as audio cassettes being replaced by compact disks, electronic books are not replacing an older format, rather the format is developing along a path in parallel with the analog standard. This appears to be a key issue with institutions that are attempting to replace analog books as an obsolete technology instead of examining how each format may be utilized to benefit the consumer.

A part of Martin Fishbein's Expectations and Evaluations Theory (Fishbein, 1975) concerns the perceived probability that objects inherently possess specific attributes and therefore meaning. This theory is built around the concept that beliefs and evaluations concerning an object are built around specific gratification sought by an individual, who then consumes media related to the object, then evaluates the level of gratification achieved, which in-turn reinforces their beliefs about the object. This directly relates to the concept of being attached to physical books, or media in general, because consumers have an expectation of tactile experience which incites emotion and facilitates memory making. When someone attached to analog books approaches reading an electronic book, the consumer has specific needs they wish to gratify. If the gratification they seek, whether it be tactile or psychological, is not fulfilled by an electronic book, the consumer will reinforce the belief that electronic books does not satisfy their needs. Physical books satisfy this need by being a physical representation of place, time, and person to the reader. Without this physical presence, much of what incites attachment is lost.

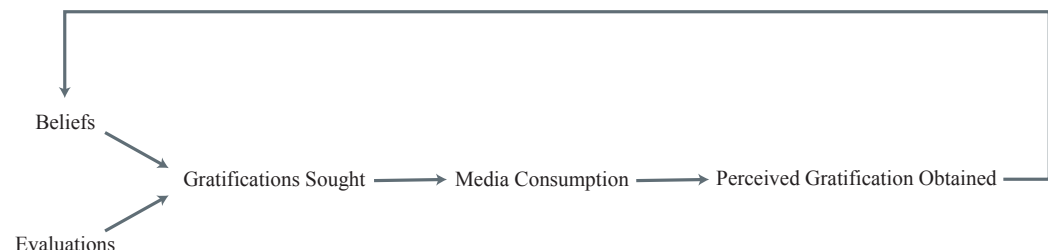


Figure 2.2 Expectations and Evaluations Theory (Fishbein, 1975)

Adoption and Plateau of E-Books

With the proliferation of mobile electronic devices from manufacturers such as Apple, Samsung, and Amazon, e-book sales began to climb sharply around 2010. By 2013 30% of adults in the United States owned a dedicated e-book reader. Many news organizations began to focus on delivery of digital periodicals rather than focus on physical copies. Publishers began to see record sales of e-books, and for the first time the publishing industry began to predict the death of print.

According to Hiltzik (2017), e-book sales plateaued in 2015. Adult ownership of dedicated e-book readers in the United States fell from 30% to 19%. Sales began to drastically decline by 2016, and in the first nine months of that year e-books sales fell 18.7% and dropped market share from 21.7% to 17.6%. For the first time in five years the sale of hardback books outsold e-books.

In the United Kingdom, Cain (2017) reported that while sales of physical books in the U.K. have seen an increase of 7% in recent years, e-book sales have declined by 4%. Flood (2016) found that while large publishers were seeing a decline in e-book sales and adoption, that independent publishers were actually able to profit from e-book sales over the same period of time.

The quality of physical book production and reading as a lifestyle are two of the contributing factors to the resurgence of physical books. As researchers study the habits of avid readers, they have begun to understand that factors such as displaying a book collection, or just being seen with a book in public is a contributing factor to the appeal of books.

Learning

Researchers Strouse & Ganea (2017) found that children below the age of 24 months experienced difficulty with information gained from electronic books. Children age 24-30 months were able to retain information, but the children who used electronic devices for primarily pre-recorded video consumption scored far less when tested against those who consumed a wider range of media types such as analog books. In most instances, adult interaction while reading proved to be the largest factor when considering word learning. Richter & Courage (2017) found the exchange between parents and their children increase cognitive response in children. Adults facilitate the learning more affectively when they interact with children while reading. Data suggests that children spend significantly more time reading analog books by comparison to electronic sources, be it computer, tablet, or e-reader. Children's attention is spent on more time looking at illustrations and other relevant content when viewing an analog source. Richter & Courage discuss the Cognitive Theory of Multimedia Learning that theorizes how people learn in environments with multiple stimulants.

Chiu, Huang, and Liang (2013) performed research on how children of different genders learn when using electronic books. Cultures in developed countries foster male interest in computers and technology from a young age. There is data to show that young females show less of an interest, therefore are not encouraged to discover technology as early as males. When the genders experience

equal fostering of interests in electronic media females tend to have superior recall of information, but the exposure to these types of media still favor a male bias.

Flood (2014) concentrated on information retention in her article which focuses on a study about the consumption of books in both a digital and analog format. Researchers gave 50 readers the same short story by Elizabeth George. Half read the 28-page story on a Kindle, and half in printed format. What the researchers discovered was that those who read the story in a Kindle format were less-empathetic to the characters and were not as likely to reconstruct the plot or place critical events of the book in chronological order. The haptic and tactile feedback of a physical book were two important components to retention of information. When individuals read through a physical book, they subconsciously understood the significance of plot points by how many pages were left in the book. They could feel their progress with their left hand (in countries which read left-to-right) by the weight of the pages they had read. The more pages they physically turn, the more likely they are to consider a plot point significant. With the digitally formatted material, this was not the case. Flood went on to cite a Norwegian study where seventy-two tenth graders were split into groups and supplied information either via a PDF on a computer screen, or a physical, printed, copy. The students were then tested over the information. Researchers found that students who consumed the information digitally had significantly worse test scores.

Ridder (2006) discusses that in order for a technical artifact to be successfully understood, that a mechanistic explanation must first be devised. In order to answer the question “How does this (digital) thing work?”, there must first be a mechanical explanation in place for the individual asking the question to understand the task. This is similar to how most computer graphic interfaces emulate an office environment. People understand what it is to place a file physically into a folder, therefore they understand the digital equivalent. The conclusion being that the form of the media needed to follow the function of the media, and that designers should begin to study what information works best in which format.

Attachment

Books have several intended purposes that could lead to attachment. These involve enhancing learning, preserving knowledge, serving as heirlooms, and recording devices such as journals and sketchbooks. With these uses the individual becomes emotionally attached to the books and the social connections that these uses tend to foster.

Strouse & Ganea research the use of electronic books by young children, and parent preference for young children to read analog books over digital. It is worth noting that the research may be affected by pediatricians recommending that young children be exposed to little screen time as possible under 5 years of age. Parents were substantially more inclined to have their children read analog books. One of the main concerns was that interactive elements within the books tended to take place of the parent interactivity with the child, leading to the child reading alone. Studies have also found that language development and critical comprehension skills develop with early parent/child

interaction while reading. Children were more likely to become attached to books they experienced with family members.

Kleeman (2016) conducted the international survey of 1000 families that tracked reading habits of children with regard to physical and digital media. The survey concluded that discovery of new content is difficult for children. Most children recommend books as often as they do apps, but unlike traditional books, children cannot lend books to one another, and with regard to digital book purchases, they do not have the power to buy or borrow them at will without an adult being involved. The study also suggested that comprehension was lower with electronic books or tablets because children were easily distracted with too many choices of other entertainment on the devices.

Passman & Longeway (1982) Two groups of toddlers were used for this study. The first group of toddlers were each given a photograph of their own mother. The second group were each given a significantly blurred image of their mother. Each toddler was led individually by a stranger alone to an unfamiliar room. Those who had possessed photographs that were in focus explored further, played more, and showed less visible apprehension when encountering strange conditions than the children who possessed an unrecognizably blurred image of their mother. The conclusion was that physical artifacts play an important component in the concept of attachment and may have an effect on other parts of socialization, especially at younger ages.

Neave, Jackson, Saxton, & Hönekopp (2015) discuss attachment to objects, and how anthropomorphism may lead to greater attachment. Their findings suggest that girls are more susceptible than boys to early childhood attachments, because they tend to anthropomorphize more than boys. The conclusion of the study is that there is a direct connection between anthropomorphism of objects and how attached humans become to them. People who experience higher levels of social anxiety anthropomorphize more, and those who experience this worst often begin to hoard. Wang (2017) researched how media delivery devices such as smart phones have become anthropomorphized by the users, facilitating attachment. The article makes the case for treating these devices as social actors because of how the users perceive the devices as companions rather than as tools.

Bando, Nozawa, & Asano (2017) attempt an objective assessment of the psychological and physiological effect of reading books digitally vs in a traditional, printed, format. What the research concluded is that there are both physical and emotional differences between reading a physical book and one displayed on a screen. Reading a physical book induced hemodynamic reactions that were indicative of a human body dealing with stress. Electronic book reading produced no discernable differences physically with regard to physical coping mechanisms. Those who read electronic books also reported eye discomfort and difficulty with comprehension.

Revelle, Hurst, Messner, & Shrimplin (2012) conducted a study at Miami University concerning acceptance of electronic books by campus faculty and students. The study categorized individuals into Book Lovers, Technophiles, Pragmatists, and Printers. The results showed that while Book Lovers were the most likely to find value in electronic formats of books, the campus overall was open

to the idea of the availability of an electronic format being available in the campus library. However, this view was contingent on the books being available in analog format as well. Undergraduates and Graduates were equal in their acceptance of electronic books, while faculty showed the most interest of all surveyed groups.

Reynard (2017) uses the Diffusion of Innovation Theory to examine what format preferences are for college students in 2017. The study examined how university libraries are changing to digital formats while the students prefer analog books. The preference is based upon how students find the material they are looking for within the texts. Students using analog books study information in a linear format. They use a combination of traditionally taught methods, such as indexes and table of contents. Students who use electronic books trend towards search functions within electronic book interfaces but gain little context for the information by doing so. Students tend to experience confusion with information acquired this way because they aren't consuming the information before and after what they have found.

Harkaway (2014) focuses on the concept that the replacement of one media by another is never a constant, rather there is an ebb-and-flow regarding how two different mediums relating to the same subject exist. The author discusses how other forms of media such as film have adapted to the change by offering consumers packaged content. Blu-ray format films often offer both a DVD format as well as a digital equivalent. The suggestion is that book sellers do the same. Harkaway discusses how the process of choosing books is completely different in a digital realm, because the reader cannot walk through a book store and sample books. If they wish to explore a digital book before reading it in the entirety, they must purchase a book first. The author goes on to discuss the tactile differences in the formats, and how there are disadvantages in not being able to easily see information in a digital copy.

Fadeyev (2017) suggests that by emulating physical media (skeuomorphism) designers play to the strengths of analog media and the familiarity that comes with it. However, by emulating physical media and consumption devices, designers often incorporate the same limitations found in the analog media they emulate. The author suggests that in order to break free from these limitations, digital media must start to break away from the idea that it is simply a digital representation of something tangible.

Montag, Kannen, Lachmann, & Sariyska (2015) research changes in behavioral patterns when using analog vs digital media devices. The purpose of this particular study was to attempt an understanding of addiction to digital media, and the contributing factors. What the researchers found was that the more they replaced digital functions with analog components, the less frequent the digital devices were used. By requiring test subject to wear analog watches, test subject showed a significant reduction in digital media use, specifically smartphones. Research suggests that by replacing features such as electronic books with the analog equivalent, subjects significantly reduced their compulsion to interact with their phones.

Summary

The literature review reinforces two significant concepts to the research. The first is a fundamental difference in the way humans comprehend information when provided in printed form versus a digital. Humans have a more difficult time, especially as children, comprehending and retaining information when presented in a purely digital format.

The second significant concept is that attachment to analog books is about more than media preference. Humans become attached to objects for many different reasons, whether it be a deficiency in human relationships, memories of life experiences tightly associated with the object, or just the tactile experience of progressing through a printed book. Sometimes attachment involves the how children perceive gender roles regarding technology, and in others it is the human interaction they receive from an adult which facilitates language development.

There are enough previously published studies which suggests that the focus of the research has a base, yet the research to be performed is different enough in nature that new conclusions may be drawn from the effort.

Chapter 3:

METHODOLOGY

Humans relate time, place, and person with physical objects. It is easy to mistake the resistance many bibliophiles show towards e-books as fear or lack of ability to adopt new technology. When surveyed or interviewed, bibliophiles rarely convey a distaste for technology or a hesitation to adopt new forms. What they express is a strong connection of memory through the tactile experience of interacting with a book and the loss of this connection when interfacing with an e-book delivery platform.

Discovering the emotions bibliophiles experience is the reasons for the methodology of the research. It was essential that bibliophiles were provided the opportunity to express in their own words why physical books mean so much to them. Interviews and surveys were developed to allow these individuals to share their experiences directly with the researcher while still providing quantitative data.

Human Research Training & Institutional Review Board Approval

To comply with federal regulations and Miami University policies, the researcher was required to complete human subjects research training. This was to ensure that the researcher was able to ethically perform research without detriment to subjects or the standards set forth by the university. The training contained two separate requirements. First was an extensive online course that covered the standards for ethically performing human research. Second, there was a required seminar where individuals seeking certification could ask further questions. Once both requirements were fulfilled, the researcher was awarded a certification and could seek approval to perform human research.

Research proposals, materials, and methods had to be approved by the Institutional Review Board (IRB). These materials and methods included:

- *Description of the proposed research.*
- *The time frame of the research.*
- *Data collection methods and management of collected data.*
- *How participant confidentiality was going to be ensured.*
- *How much risk the participants would be exposed to as a result of the research methods.*
- *Research subject population.*
- *Consent processes.*
- *Recruitment scripts.*
- *Survey and interview questions.*

Once the IRB received the materials and the research methods were reviewed, the researcher was notified of required changes. The changes were made, and after several submissions, the IRB approved the research. This is when the survey and interviews began.

Survey

Use of an online survey was an important factor to the collection of data for this research. It provided an easily distributable, anonymous, platform for bibliophiles to speak about their reading and technology habits. While much of the survey was quantitative in nature, an open-ended final question gave participants the opportunity to share in-depth experiences and thoughts about what books meant to them.

Google Forms was used to construct the survey, which was presented through a purpose-built website that acted as a portal. The site contained a brief description of the study, contact information regarding the researcher and university, and a mandatory consent page that acted as a gateway to the survey. The following is the information provided on the home page:

“This survey is part of a study entitled Unique Emotional Attachment to Analog Books Over Digital Alternatives.

The purpose of my research is to attempt a deeper understanding of why people still love physical books when there are many different ways to consume the written word. The survey should take no more than 10 minutes and will provide valuable insight for my research.”

After taking part in the survey, the participants were supplied the opportunity to request or deny a copy of the research findings. This was accomplished through voluntarily supplying an email address where the findings may be emailed upon completion of the research and thesis presentation. Data was collated by Google Forms and a backup was saved in a Microsoft Excel format onto a password-protected Western Digital portable hard drive.

Web hosting provider Squarespace was used to host the site. The domain thebookstudy.org was chosen for the sake of simplicity and registered through Hover. Other names were considered, but many were found to be overly-descript, and in some cases led the participants to conclusions before the survey even began. Thebookstudy.org proved to be memorable and descriptive without leading the participants.

Colors for the site were chosen with the specific intent of being subtle and classical, varying between darker and lighter grays, a cream color meant to remind users of book pages, and subtle accents of green. Serif typefaces were chosen to be reminiscent of fine literature. The single image on the site is large macro of a book corner, again keeping with the color scheme of grays and creams.

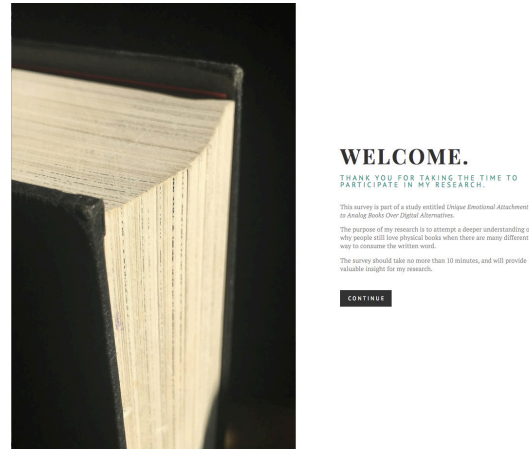


Figure 3.1 The Book Study Website

The survey consisted of 21 questions. In order to ensure participants satisfied selection criteria for the study, participants answered three qualifying questions. These consisted of an age requirement, involvement in reading at least one book per month, and access to electronic reading hardware between the years of 2007-2017. If the participant did not pass these qualifying questions, they received a message that they did not qualify for the survey and were thanked for their participation.

The questions in this survey were purposefully written to address attitudes toward technology, attachment to inanimate objects, tendencies of the participant to anthropomorphize objects, and the social aspects of their book reading habits.

The survey was distributed on the social media platform Facebook through the messaging feature to individuals willing to post the survey to their own walls, and if chose, request that those who take the survey post it to theirs. The researcher did not post information regarding the survey to their own wall or supply any identifying markers that they were conducting the survey. The following script was supplied to each person sharing the survey, though some modified the script to suit their own personalities:

“My friend is a graduate student conducting a study on the Unique Emotional Attachment to Analog Books Over Digital Alternatives. This online survey should take no more than 5-10 minutes. Responses will remain anonymous, and you may end at any time without obligation to finish the survey. Your participation will be appreciated!

The survey may be found here: <http://www.thebookstudy.org>.”

The survey was active from February 1, 2018 to February 28, 2018. It was shared by participants to other social media networks such as LinkedIn, where the survey saw a surge in participation.

Semi-Structured Interview

The researcher chose to perform face-to-face interviews in order to study the body language and voice inflections of the participants as they spoke about books. Interviews show excitement, disappointment, anger, and complacency in ways that may be difficult to interpret through surveys alone. A semi-structured interview allows participants to explore subject matter that researchers may not have considered and yield unexpected valuable data.

Coding Example - Survey and Interviews

1 theme	megatheme	subtheme	events	evidence example
2 Finished Reading	Action	Completed a Book		1 Mentions completing a book in one day
3 Finished Reading	Action	Completed a Book		6 Mentions completing a book
4 Dressing like character	Action	Cosplay		1 Mentions dressing like a character from a book
5 Reading and walking	Action	Events		1 Mentions reading and walking at the same time
6 Library	Action	Library		12 Mentions library books
7 Flipping Pages of Book	Action	Page Flipping		8 Mentions flipping the pages of a book
8 Pages Read	Action	Pages of Specific Book		1 Mentions how many pages of a book they read
9 Huge part	Action	Pride		5 Refers to books as a huge part of their life
10 Interaction with books	Action	Pride		2 Interacting with a physical book is important to them
11 Return to Book	Action	Rereading Book		17 Makes reference to rereading book
12 Being given a book	Action	Sharing		5 Mentions being given a book someone
13 Loan	Action	Sharing		2 The person was loaned a book
14 Never Loan	Action	Sharing		3 Individual will never alone a specific book to anyone
15 Sells Books	Action	Sharing		1 Says they sell books
16 Sells books to save space	Action	Sharing		1 They sell books to save space
17 Sharing Books	Action	Sharing		7 Mentions sharing a book with someone
18 Share Giving	Action	Sharing		7 Giving away/donating books
19 Odor of Books	Action	Senses - Smelling		11 Mention smelling odor of books
20 Author Specific	Author	References Author by Name		12 References authors specifically by name
21 Stephen King	Author	References Author by Name		2 Mentions author Stephen King by Name
22 Walter Isaacson	Author	References Author by Name		1 Referenced Walter Isaacson
23 Generic Author	Author	Reference Author Generically		7 References author generically
24 Midnight release of Harry Potter	Book Series	Events		4 References a midnight release of a Harry Potter book
25 Midnight release general	Book Series	Events		3 References a midnight release of a book
26 Keep all their books	Book Series	Multiple Books		3 Mentions that they keep all of the books they read
27 They kept a series of books	Book Series	Multiple Books		7 Said the kept a book series
28 Multiple books per week	Book Series	Multiple Books		1 Mentions reading multiple books per week
29 Series	Book Series	Multiple Books		7 References a series of books
30 Mentions Book Title	Book Titles	Calls a book by Title		34 Mentions a specific book title
31 Hunger Games	Book Titles	Calls a book by Title		5 Refers to the Hunger Games Books
32 Mentions Lord of the Rings	Book Titles	Calls a book by Title		2 References J.R.R. Tolkien's Lord of the rings
33 Mentions Bible	Book Titles	Specific Books		3 Specifically references the Bible
34 Mentions The Hobbit	Book Titles	Specific Books		2 References J.R.R. Tolkien's the hobbit
35 Mentioned Harry Potter	Book Titles	Specific Books		11 Uses the name Harry Potter to describe series
36 Audio books	Electronic Books	Audio		2 References using audiobooks
37 E-book	Electronic Books	E-book Files		3 References e-books

Figure 3.2 Survey and Interview Coding

Most participants were recruited from the pool of individuals who volunteered to share the survey through their social media accounts. This ensured that they met the qualifying factors of the survey as well as having expressed interest in the subject of the research. One participant heard of the study and personally contacted the researcher to setup an interview, with the remaining participants being contacted through Facebook Messenger. Six individuals were chosen and all six participated.

Prior to the interview, each participant was supplied a written description of the research and a participant consent form. It was required that the consent form be signed before the interview began, and those participating via Google Hangout signed a digital copy and emailed the form to the researcher.

Interviews were conducted at the convenience of each participant, and the location depended upon the preference of the participant. They took place in a variety of environments, including coffee shops, the kitchen of the researcher, an office at Miami University, and over Google Hangouts video conferencing software while the participant sat in their home library. The audio conversation was recorded on a Tascam DR-40 Linear PCM Digital Recorder, then stored on a password-protected Western Digital portable hard drive in a safe in the home of the researcher.

Coding

The qualitative data from the surveys and interviews were analyzed and coded in order to discover trends in participant responses. Interview results were coded and collated with the survey codes, although a copy of interview codes was kept separate from the survey for reference purposes. The coded responses were compiled in a Microsoft Excel spreadsheet and stored in the same convention as other data in the research.

Survey coding was conducted first, specifically for the information collected from the open-ended questionnaire. Using methods outlined in Saldaña's *The Coding Manual for Qualitative Researchers* (Saldaña, 2013), coding was performed and then analyzed to formulate mega-themes and sub-themes. 187 codes were created in Microsoft Excel outlining specific aspects of the survey participant's experiences with books. An abbreviation was used as the code, a theme defining the code was established, how many occurrences of the code were recorded, and an evidence example was given to help establish a definition of what the code represented.

For example, if a participant used phrases that included terminology such as the *smell of a book*, *odor of a book*, or how *encountering the smell of a book* incited memories or emotions, these would all be coded under the code *Odor*.

code	theme	megatheme	subtheme	events	evidence example
Odor	Odor of Books	Action	Senses - Smelling	11	Mention smelling odor of books

Figure 3.3 Coding Example

Mega-themes were then created and labeled with color to categorize the codes under broad subject terms. These mega-themes were then analyzed for specific trends that were used to create a category of sub-themes. The same process was repeated for the interviews, then the findings from both were combined. Codes with only one event were analyzed and combined with similar codes, deleted, or left remaining. The number of times these codes were applied to recorded data was displayed as events.

Chapter 4:

RESULTS & FINDINGS

Data collected from the survey and interviews indicates that attachment to physical books has as much to do with a need to attribute meaning to physical objects as it does the tactile experience of reading a physical book. Yes, participants mentioned aspects such as the odor of new and old book pages, the satisfaction of flipping paper, and the feeling of accomplishment as they drew physically closer to the end of a book. They mentioned worn, used, books as a well-travelled path, and many recalled the importance of cover art as an attractive component to becoming interested in picking up a book. However, participants in the survey mentioned emotional factors more often than tactile when explaining why they had a profound attachment to books. Most cited how books could make them vividly recall time, place, and person.

While story and characters were regarded as significant to many of the readers surveyed, these elements were not mentioned among the most important aspects of a physical book. E-books supply content such as story and characters, but e-books do not have a physical form. Without physical form readers do not have an object with which to attribute importance, an apparent necessity to the attachment process.

People become uniquely attached to physical books over digital equivalents because it appears that humans have an innate ability, or even need, to attach meaning to physical objects (Neave, Jackson, Saxton, & Hönekopp, 2015). Less potent examples of this manifest themselves as attachment to singular objects; a lucky coin for example, or perhaps a book that a child kept into adulthood that reminds them of their grandparent. Neave, Jackson, Saxton, & Hönekopp (2015) performed studies that indicated in extreme, rare, examples this leads to hoarding, where so much emphasis is placed upon the importance of all objects in an individual's possession that even the smallest gum wrapper has significant meaning.

The research points to two distinct areas that lend significance to physical books. First is the tactile and sensory component. Second is that books allow for a strong, distinct, connection point for recollection of time, place, and person to the readers.

Tactile and other sensory experiences were mentioned frequently by research participants. Odor played a significant part of the responses, with participants citing the odor of old books, new books, and bookstores as particularly pleasing to experience. The tactile sensation of the pages was mentioned, as was the satisfaction of page turning. The heft of a book was a component of the attraction to physical books, with the weight of read pages in their left hand providing a sense of accomplishment as they drew nearer to the end of a book. Warmth was another sensation mentioned frequently and was associated with the most pleasing environments in which to experience reading.

Recollection of events, places, time, and people were among the most popular connections to a physical book. Childhood, being read to as a child, or reading with a child, were the most mentioned memories by participants. Childhood and the positive effect matriarchs had on the participant attachment to books were mentioned most frequently, although family members as a group had a lasting impact on attitudes towards reading. Participants also mentioned books having a strong connection to memories regarding vacations or trips. With regard to memories of specific time, participants related books to what stage of primary, secondary, or post-secondary schooling they were in when reading a book. They generally mentioned specific years only with regard to life events and reading after their highest-level of education.

Limitations of the Research

The scope of the research was limited to a comparison of physical books to a singular type of media, which was e-books. A longer investigation of the subject may examine participants attitudes towards other types of physical and digital media.

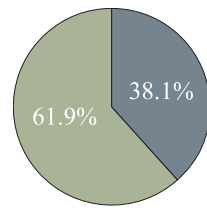
Participants in the research were largely from western countries with primarily English-speaking populations. Much of the survey was taken in the United States, with Nova Scotia, Canada, and Brisbane, Australia as outlying participants. A larger sample that included Asian, European, African, and South American participants could supply a more diverse set of data.

Findings

There were 186 total participants in the study, ranging in ages from 21 to 79. The majority of respondents fell between 23 and 54, with the largest number being age 52 at 10.6% of total responses, followed closely by age 30 at 8.8%. The participants cited being from 86 cities. 33.5% of these individuals read more than 30 books per year.

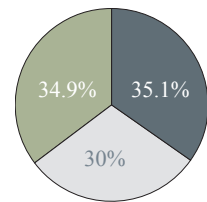
Highlights of Primary Survey Questions

Do you ever consider how an object feels when you consider getting rid of it?



61.9% of the responses to this question indicated that they frequently question how an object feels when they get rid of it, with 38.1% saying that they almost never consider this.

Do you keep media such as VHS or music cassettes, CD's, 8-Track tapes, or vinyl records even if you no longer possess the devices to play them?



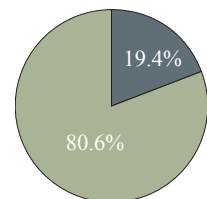
34.9% of the responses indicated that they sometimes keep obsolete media, with 30% responding that they frequently keep obsolete media. 35.5% almost never kept obsolete media.

Are you more or less likely to part with an object from your childhood?

80.6%

80.6% of respondents indicated that they are more likely to keep items if they were from their childhood.

Would you consider yourself an early adopter of new technology? Do you like to buy new technology before anyone else?



The majority of responses, 80.6%, indicated that they were unlikely to be early adopters of new technology. 19.4% indicated they are frequently adopters of new technology.

Are you more likely to adopt new technology if you know someone who has already experienced it?

97.1%

97.1% of respondents indicated that they were more likely to adopt new technology after someone they knew had experienced it.

Do you tend to adopt new technology only after the technology you currently use becomes obsolete?

60% 60% responded that they have a tendency to adopt new technology only after the current technology they use becomes obsolete.

Do you feel an e-book should cost as much as the same book in print form?

87.6% 87.6% said they do not believe that an e-book should cost as much as a print book.

Have you regretted purchasing an e-book because you would have liked to have loaned the book to a friend or family member?

57.2% 57.2% indicated that they did regret an e-book purchase because they could not easily give the book to someone they knew.

Do you sell or give away books when you are done reading them?

81.8% The majority, 81.8% responded that they tend to keep books they have read.

Do you display your favorite books in your home?

77% 77% responded that they frequently display their books in their home.

Have you ever been affected emotionally by the death of a character in a book, such as crying, depression, or anger?

73% 73% had been emotionally affected and showed outward signs of crying, depression, or anger at the death of a character in a book.

Has the content of a novel ever influenced how you act or dress?

63.5% 63.5% indicated books had affected their outward appearance or actions.

Highlights of Interview Questions

What are the types of things that incite you to read a book?

Responses varied between two major themes. First was the cover art of the book. This was mentioned at least once by all the individuals interviewed. The second was recommendations by individuals they knew. Interviewees were more likely to read a book they had not considered if someone they knew had recommended the book.

Think about the physical books you own. Once you have read these books, do you keep them?

-Where do you store the ones you keep?

-Where and why do you get rid of books you do not keep?

Most participants who were interviewed shared that they kept the books they read, although those who did get rid of books always gave them away, either because they viewed used books as rarely having value worth pursuing, or out of altruism. Those who took from free book bins felt an obligation to return the favor to those same bins.

The majority of participants mentioned having two main types of book shelves in their homes. There were general book cases for the books readers chose to display, and then private book cases for books that had significant meaning to the individuals. None of the interviewees described these books as possessing significant monetary value, rather the ones kept private held significant sentimental value.

Four of the Six individuals interviewed mentioned prominently displaying books in their homes as a show of intellectual prowess, or as a sign that they are a bibliophile. They used books as a strong self-identifier and referred to themselves as being a member of a greater group of those who are passionate about reading.

Are you more or less likely to get rid of a book that was given to you by someone you know?

Individuals said that they keep all books given to them, regardless of interest or intent to ever read the book. The reason fell into two main categories. One is that they felt it was socially unacceptable to part with a gift, and two the act of being given a book was in-and-of-itself a special act that was not to be taken for granted.

Where the interviewees gave special attention was the idea of someone from their family or past giving them a book. Most cited a parent or grandparent, and that these books held special meaning for them as a physical reminder of that individual.

Think about your book reading habits for a second. When you read a book, do you associate the book with events that were happening in your life at the time you read it?

The majority of the individuals said they strongly associated the books they read with events that occurred in their own lives while reading. Going back and reading or being in the presence of a book could make them vividly recall time, place, and people from their pasts.

What is your experience with e-books?

-Do you believe e-books hold the same personal value as a physical book?

-Do you believe e-books should cost the same as a physical book?

Many of the participants had experience with e-books, but none would choose an e-book as a primary way to read. Several interviewees said that they have used e-books as a last resort when reading. Those who did not have experience with e-books said that they were sure they would hate the experience and cited their daily jobs which included looking at screens all day as part of the reason. They viewed non-screen related activities leisure in nature and considered reading a leisure activity.

The opinion on the monetary value of e-books was split, with most citing a lack of production cost and distribution as the reason e-books should cost less. Others argued e-books were still intellectual property, therefore they should retain the retail value of a physical volume.

Have you kept any books from your childhood? Why?

All participants responded yes to this question. The reasons were primarily to remind them of individuals who either read with them as children, or because it reminded them of specific events during their childhoods. One participant, age 29 recalled replacing all of the books from their childhood when the books were destroyed in a house fire, because the books were considered a direct attachment to their mother who had passed when the participant was young. Another was unable to recall specific memories from their childhood unless the memories were directly connected to objects, many of which were books.

Highlights of Survey Open-Ended Question

The final question of the survey was an open-ended question regarding memories associated with books:

Take a moment to think about your experiences with regard to reading books. What are some significant memories that you strongly associate with a book, and as a result has that affected your desire to keep a physical copy of that book?

The information collected was an invaluable resource, as it reinforced many of the ideas that had been noted in the interviews. The information was coded and analyzed for trends.

The most popular responses pertained to relationships and memories than the subject matter of books. The top responses were all related to strong recollection of memories. The most common delineation being memories of being a child or being read to as a child, with many referring specifically to a mother or grandmother in their responses. Notes or messages written by someone they knew were an important component, especially if it was someone the participant looked up to as a child. Mentions of family, in general or of specific family members, was a significant part of the responses, although matriarchs were mentioned more frequently.

A high number of responses made general reference to books completely changing the lives of the reader and did not point to specific genres as a component to this. The responses ranged from self-help books to books as a whole allowing them to escape from differing types of emotional adversity. Individuals describing specific times in life when these changes occurred often referred to where they were in relation to their educational progression rather than age, using grade school, junior high, high school, and college as points of reference. If events occurred later in their life they would then refer to themselves as being a specific age.

Tactile sensations were mentioned frequently. Odor of old and new books was the most common response, with page turning and the satisfaction of seeing progress as they turned more pages being mentioned frequently. Environments were mentioned, and warmth was used as a desired feeling when reading, with individuals mentioning the warmth of a beach on vacation or reclining under several blankets.

With regard to the content of the books, faerie tales and mysteries were genres mentioned most often. While authors and book titles were mentioned frequently, Stephen King was the author mentioned the most, followed distantly by J.R.R. Tolkien. Out of all the book titles mentioned, one-third of these were related to Harry Potter. Respondents described identifying with characters as being a significant part of why they read books and described emotional involvement with characters and being transported to or close to environments within the book worlds.

With regard to e-books, the majority of responses were negative, since the respondents did not perceive e-books as facilitating the same tactile or emotional response. They saw no way to attach memory or sentimentality to what they viewed as facsimile of a tangible object.

Theoretical Connections

When comparing the theoretical foundations that support this research, interesting connections begin to appear. Bibliophiles have an established expectation of experience with regard to reading. Martin Fishbein's Expectations and Evaluations Theory (Fishbein, 1975) addresses the concepts of expectation and gratification. The Diffusion of Innovation Theory (Rogers, 1962) evaluates rates at which technology and new ideas spread and are adopted.

The Expectations and Evaluations Theory (Fishbein, 1975) states that humans have a perception that objects inherently possess specific attributes and meaning. This theory suggests that the attributes and meaning humans associate with objects is in direct correlation to the gratification sought after by the individual. The research data shows that bibliophiles approach reading with expectations that may only be satisfied by interacting with a physical object. Tactile experiences and attribution of meaning and memory to physical books are a significant part of reading for bibliophiles, and once experienced the reader feels gratification. E-books do not deliver the tactile or perceived emotional value of a physical book to these individuals. This explains why electronic books are so often perceived as dissatisfying by bibliophiles. E-books fulfill only one portion of the expectation, which is the story and relationship to characters. When the e-reader, tablet, or phone does not fulfill the physical aspect of the experience, it is perceived as being disingenuous and the reader does not experience the gratification and attachment they desired.

For this research The Diffusion of Innovation Theory (Rogers, 1962) was used as a lens to view the experiences of bibliophiles and their resistance to e-books. Research data suggests readers were applying meaning to physical books and evaluating them by levels of gratification. Because of this, e-book reader acceptance as a technology is skeptically received by bibliophiles during the adoption process outlined by Rogers (1962). This may be mistakenly interpreted as resistance by bibliophiles to accept the technology that supports e-books. The research data shows that this is not the case. While bibliophiles are not the earliest adopters of technology as a whole, they are not resistant to technology use or new concepts. If we use Rogers (1962) theory, we can interpret this in two different ways. Either bibliophiles are technological laggards, which we have established that they are not, or the technology they are experiencing is not fulfilling their need for gratification.

Chapter 5:

PHENOMENA RESEARCH CONCLUSIONS & DISCUSSION

Books have significant meaning for many people, and for these individuals that meaning is expressed in different ways. For some people physical books are reminders of time, place, and person. They are a physical identifier of intellect. The stories and characters are very important to readers, but the context in which they read a book is often just as significant. Much of the research data suggests that there is a substantial connection between the experience of reading a physical book, memory making, retention, and the application of meaning to books as artifacts representing concepts.

These are opportunities that the publishing industry seems to have missed in an attempt to quickly broaden the acceptance of e-books. The publishing industry may not have evolved electronic book platforms to where they are attractive to readers who value the tactile experiences associated with physical books.

When tablet applications such as Apple iBooks were introduced 2010, there was excitement for the possibilities of the platform (Kunhardt, 2010). Apple, Samsung, and Amazon all produce powerful tablets capable of combining the internet, social media, sound, and video into a cohesive package. What the publishing industry has done is forgo the capabilities of the delivery platforms by producing mostly one-to-one transfers of books in various e-book formats. The power of platforms such as the iPad were used for primarily page-turning animations rather than a deeply enriched experience that could not be replicated in print form.

Recommendations for Future Research

Future research should be broadened in several ways. There are many areas where books and media such as sound, video, and photography intersect that could be examined. Attachment to physical media in a progressively digital age is an area that appears to be rich for exploration. Much of the established research deals with a versus comparison between different media or an exploration of why there is a hesitation in digital adoption rather than exploring why people are uniquely attached

to physical artifacts. The most in-depth research in attachment to physical objects appears to be in the area of hoarding. This is where the real opportunity exists. If the majority of research and published work focuses on the extreme end of the attachment spectrum, then there are many areas of subtle attachment that have yet to be explored.

Recommendation for Design Intervention

The approach to a design intervention should not be to convert readers to e-books. The research suggests that most readers possess a negative outlook on the current state of e-books which they view as little more than a facsimile. Instead, opportunity for innovation should focus on providing bibliophiles with features that encapsulate the level of gratification they seek that leads to attachment.

Responses from this research indicate that people associate books with the time and place they read the book and with those whom they associated during the reading. This is a key component that the design should fulfill. If a new type of e-book is to be created, it needs to replace the physical association of a book with a digital component. There should be a way to record the associative properties of a physical book digitally. The intent should not be to replace physical books, rather provide an experience physical books cannot.

Both survey and interviews show that reading is a social pursuit for many people. Book recommendations from individuals a reader knows is one of the primary ways new books are discovered, and many readers want easier ways of sharing this experience with more people. This should be a key aspect of the design. Interview participants all expressed a desire to share books with people they know, and to share their own thoughts and evaluations regarding books with these individuals. This indicates that there may be a social opportunity for e-book delivery platforms to address that currently is being underutilized. An interview participant, 29, and another, 47, both expressed a sincere interest in being able to talk about books with people who currently live far away.

More opportunity involves additional materials by the author, perhaps videos and author notes that may be added to the e-book to provide a more enriching experience. All interview participants expressed an interest in content that brought the author as well as their ideas and motivations closer to the reader.

Chapter 6:

DESIGN INTERVENTION

Design interventions are not always obvious. This is why research is extensively pursued and data analyzed before interventions may be designed. The research began with one simple question:

Why do people develop unique emotional attachment to analog books over digital alternatives?

The answer was not always obvious. The acceptance of digital media has traditionally followed a linear path transitioning from analog formats to newer digital formats, resulting in obsolescence of the analog. This is exemplified with audio cassettes transitioning to CD or VHS cassettes transitioning to DVD. Electronic books are different. E-books exist alongside their analog counterparts, and despite predictions to the contrary by the publishing industry, e-books have not replaced analog books. Analog books continue to thrive, and in recent years hardback sales have eclipsed e-book sales of the same literature (Hiltzik, 2017).

A design intervention had to work with bibliophile desires rather than against. The first, and most important, aspect of the intervention was the following mission statement:

The goal is not to replace physical books with an e-book.

This proved more difficult than initially expected. Early design ideas kept returning to the same concept; make an e-book more like a physical book. This, of course, would not work because it was not fulfilling the needs of the readers. The researcher decided to return to the data and deliberate with the intent to categorize all the data into fewer, broader, themes. The coding was analyzed which resulted in the discovery of three overarching desires: the desire to share reading with others, the desire to make memories, and the desire to experience deeper content relating to the books they loved.

Design Process

A Venn diagram was created to discover and illustrate where these desires overlapped and what those overlaps meant. Those areas would be what the design solution needed to address.

Reader Attachment Diagram

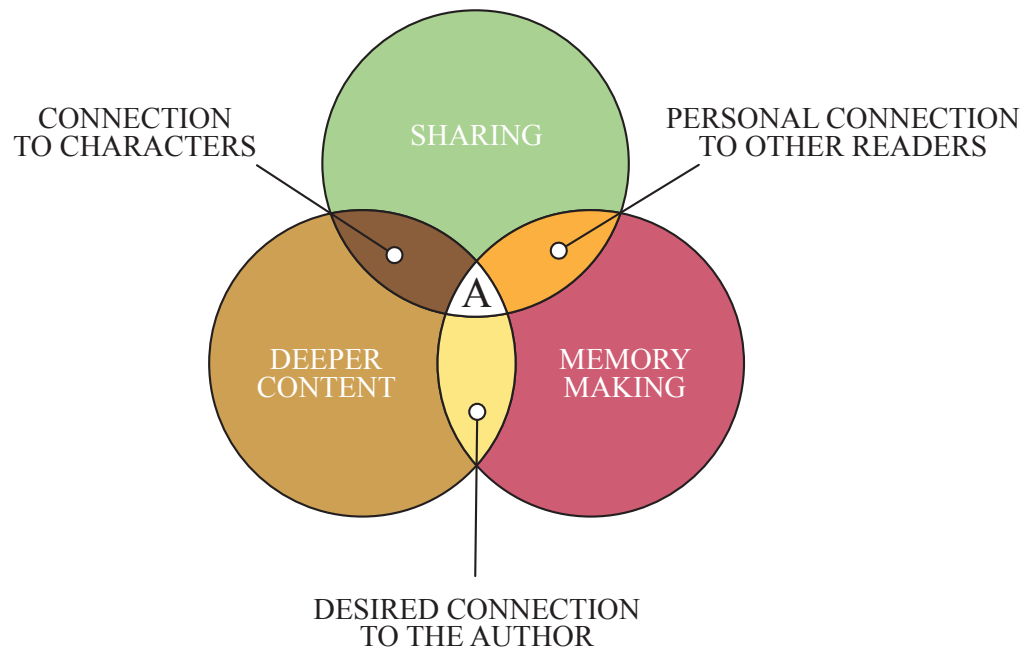


Figure 6.1 Reader Attachment Diagram

Sharing was overlapped with memory-making. The resulting concept was a desire to connect with other readers. Memory-making and deeper content resulted in a strong desire to connect with the author. Deeper content and sharing revealed a desire for connection and greater understanding of characters or content of books.

These three desires helped structure a design intervention that would not replace physical books, but instead work as an alternate way of creating attachment and provide incentives to owning digital editions of books. The design would consist of ways for authors to involve readers in the processes behind the writing, a way to share thoughts, opinions, and recommendations on books, and a way to record memories that may be accessed and shared with others. While the design would not replace a physical book with an e-book reader, it would incorporate e-books and the option to purchase physical copies of books. The importance of being able to partake in conversations regardless of what format one chooses to read is important.

The design was a tablet application that provides readers with options beyond simply having the convenience of digital books. The application would address the three critical desires of socialization, connection with the author, and memory making. After considering several different names, BookLinks was chosen for the simplistic way the name conveyed the connections between the user and the social functions outlined in the application.

Early sketches were created to determine size, color, and layout of key interface areas. Again, the researcher looked at the coding for answers. The most common sensation associated with desired reading environments was warmth. This was the inspiration for the color palette.

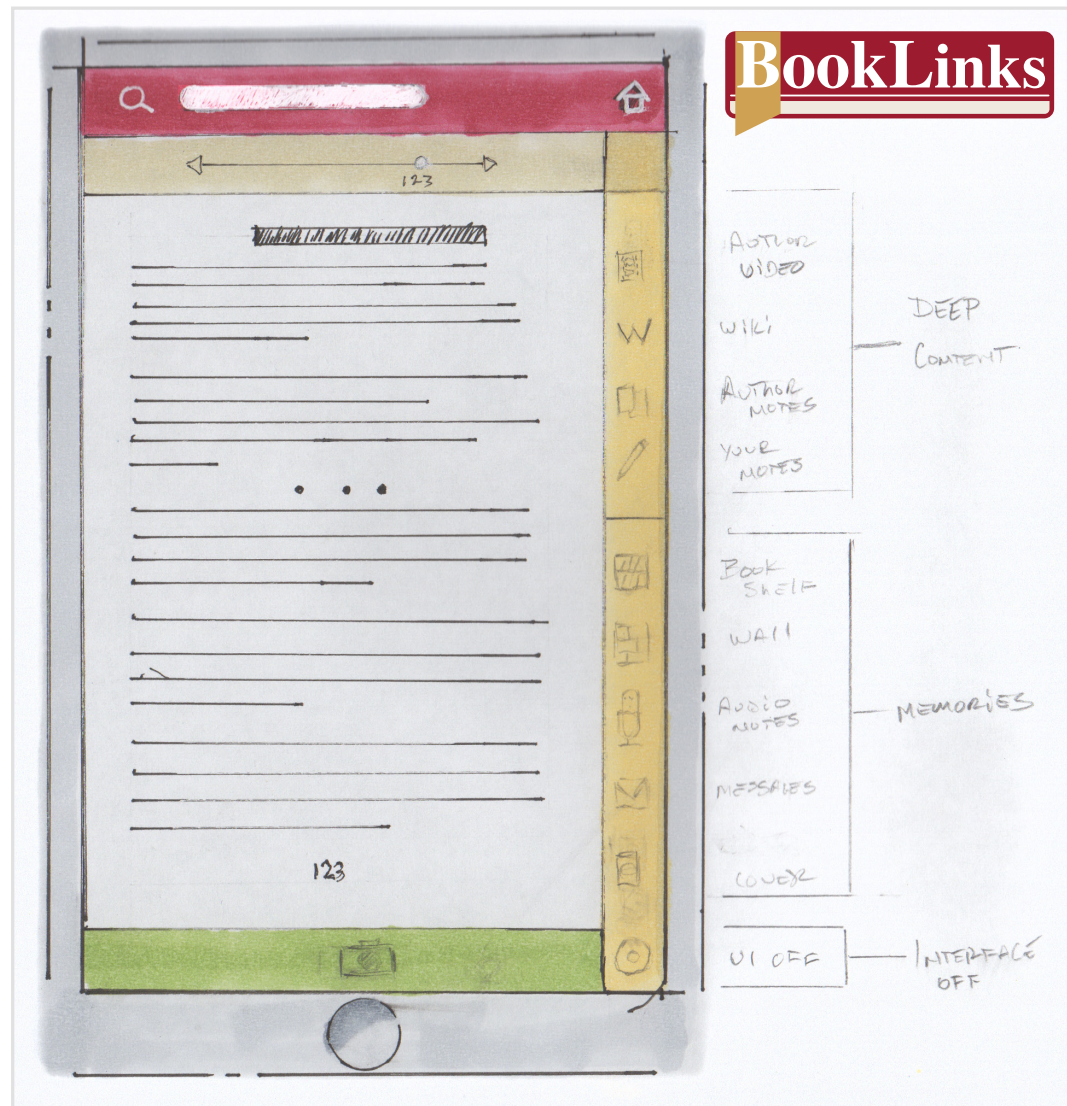


Figure 6.2 Early user interface sketch

The mockup was built with tools that exist within the Adobe Creative Cloud:

Adobe Photoshop
Adobe Illustrator
Adobe XD

Adobe XD was used to mockup the tablet application while Adobe Photoshop and Adobe Illustrator were used to produce graphics. The rationale behind this decision was seamless integration between the Adobe applications. There may be software that delivers more capable prototypes than Adobe XD, but for the purposes of the research a proof-of-concept application mockup would suffice. Layout placement and edits were performed on a 2016 MacBook Pro with two 27-inch external

monitors. A fourth generation iPad Mini was tethered via a USB Lightning cable to the MacBook Pro. This provided live feedback on layout and sizing of the app through the Adobe XD preview application on the iPad.

Adobe XD allows for testing through XD itself, a web browser, on a mobile device tethered to a PC, and files may be uploaded to Adobe.com for testing independently on any device with an internet access point and a copy of the XD mobile application.

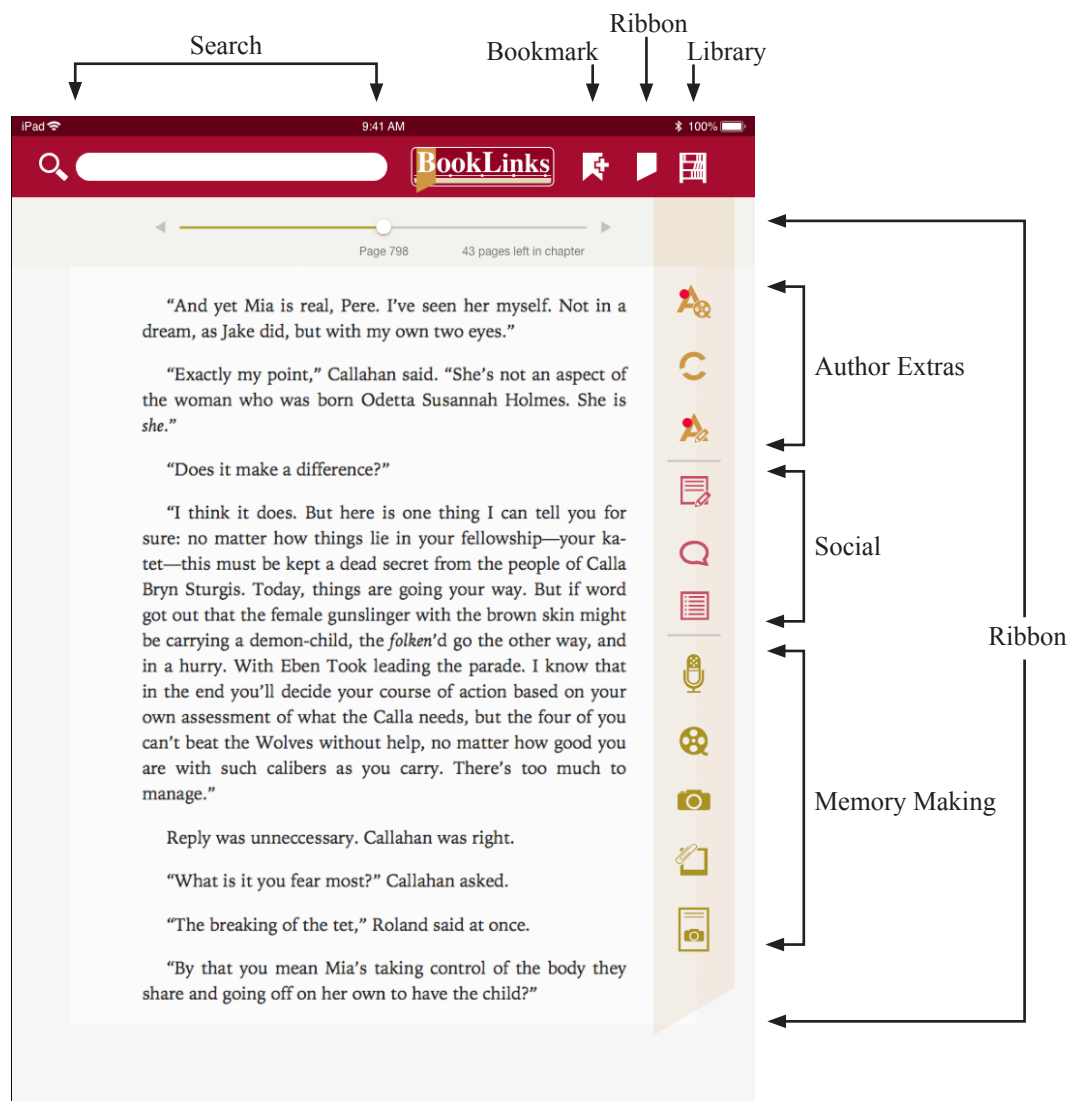


Figure 6.3 Page interface with Ribbon





Figure 6.5 Bookshelf page

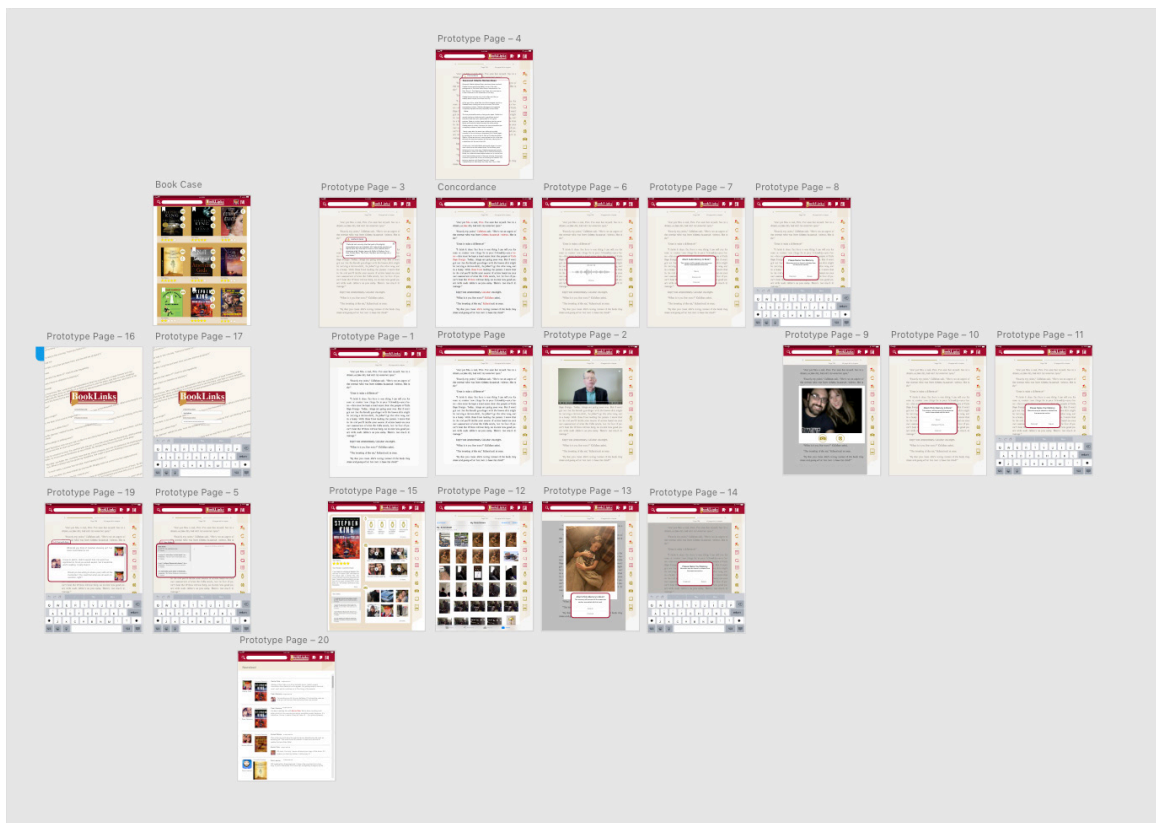


Figure 6.6 Application content layout

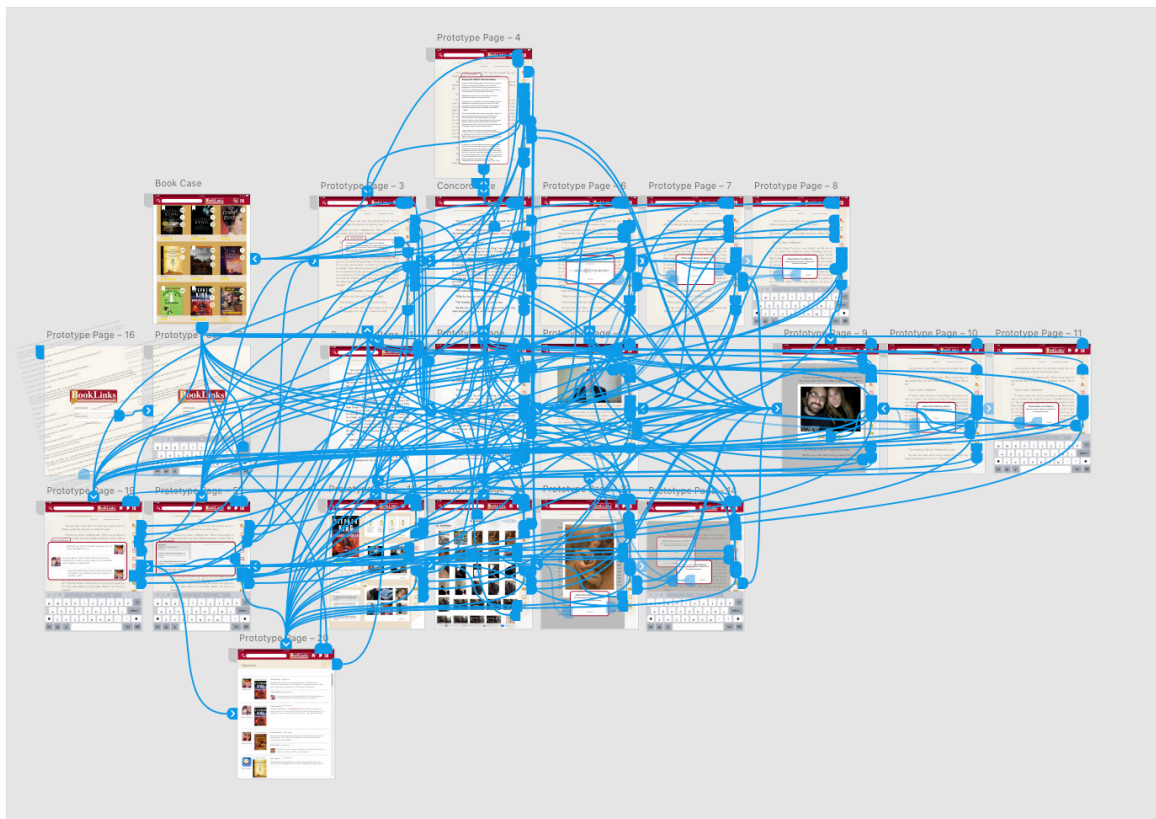


Figure 6.7 Content navigation paths

Testing & Data Collection

Testing was performed under a variety of conditions with four different participants. All participants were individuals who had been interviewed during the primary research. They were chosen for three reasons: these were individuals who had already qualified to be part of the research, their histories were already well documented, and there would be a clear delineation between their experience before and after testing. Participants were age 30, 47, 31, and 42.

Participant #1, 30, tested the application via a web browser in their home. The testing was conducted through the video chat service Google Hangouts with the participant's screen and web camera shared with the researcher.

Participant #2, 47, tested the application via a web browser in the researcher's home office. The researcher was present for the testing.

Participant #3, 31, tested the application on a fourth generation iPad Mini tethered to a MacBook Pro. The testing session took place at the Golden Nugget Pancake House in Dayton, Ohio.

Participant #4, 42, tested the application on a fourth generation iPad Mini. The application was being run through the Adobe XD iPad app using files synced from Adobe.com. Testing was performed in the kitchen of the researcher.

At the beginning of each test session several key points were covered before testing began. The following information was provided for participants:

- Testing would be focused on user experience and opinions of key features. Overall design and usability would be discussed toward the end of the session, but the participants needed to focus on the concepts behind the application rather than strictly user interface.
- A tutorial on the application navigation and iconography.
- The concept behind the application was not to replace physical books with e-books, but rather provide a design which added rich content to reading experiences.

Participants were encouraged to provide feedback on features. The researcher took notes and assisted with technical issues as they arose, which generally involved hotspots in navigation not working properly due to intermittent lag while tethered.

Data Analysis

Testing notes were coded using the same methods as those used for the survey and interviews. Twenty-two codes were created from the data, again with mega-themes and sub-themes. The codes were analyzed again, and similar concepts combined to create a more cohesive picture of the testing.

Results

Participants were most intrigued by the deep author-related content and the ability to record a variety of sharable memories related to the book.

Quotes from the Testing:

(With regard to sharable audio book notes) “Just to hear someone’s voice you care about would be so lovely!”

(Purchasing a book for someone with the memories you created attached) “It would be really cool to be able to leave an emotional footprint for someone to find.”

“I don’t own an iPad, but I would buy one if this app was actually available.”

“If there was an edition for children’s books where I could record all of (my sons) memories reading the book I would buy the app. I would easily pay \$5.99, and I usually don’t buy expensive apps for the iPad.”

“I would totally use this app. The author notes are the best.”

“Seriously dude, I’m absolutely interested in this. You should try and get this made.”

Social media functions beyond attaching content to books was received favorably by most, but was not cited as being a feature that interested them enough to purchase the app.

“I love the album with your notes and sharable content in one place. I don’t care for the actual social-media function though. I have Facebook and Instagram and I rarely post to those now.”

“Sharing notes between one another would be fantastic. I would love to read a book with (a friend) and be able to leave her notes and voice messages about the book. Although there would have to be a way to prevent spoilers! The social media feed is okay, but I’m more interested in the personal interaction.”

Data Analysis

Based upon the testing data, several hypotheses were proven correct.

- Bibliophiles are dissuaded from e-books because the format offers little added value. When features related to memory-making and the exchange of ideas are added, the perception of value changes significantly in favor of the digital format.
- A desire to understand the motivations behind an author's work is a factor in establishing attachment to a book regardless of format.
- Bibliophiles do not desire a replacement for physical books, but they are open to other formats as long as the format facilitates emotional connection to others.

The application was well-received by participants. Perhaps the most poignant part of the testing was when each participant, without instigation, began to talk about what they could accomplish with an app like BookLinks. The data suggests that what readers would primarily utilize the app for would be to achieve a deeper understanding of author motivations and to create and share commentary with friends and family. The social media feature received a lukewarm response because participants wanted to share with other readers directly rather than by posting to a wall. The album section, which features all the user created media associated with the book, received the highest praise.

Suggestions for Future Design

Less emphasis on social media walls and more features connecting individuals directly are two important design choices to consider. A dedicated store with the ability to purchase and gift books with the option to include memories and notes was requested by three of the four participants and would add another layer of connection. Customizable dedications that could be included with a gifted book would personalize the experience further. A version for phones and personal computers may be a way to broaden the appeal of the application.

Chapter 7:

Design Research Conclusions and Discussion

Information and storytelling take many forms. Books deliver a special experience for those who love them no matter the format. Physical books provide a deep, emotional, experience because of more than just content. Physical books are objects which readers perceive as having meaning and value that represent memories of place, time, and person. Electronic book use has significantly declined since 2015 in places such as the United States and the United Kingdom, and publishers have had a difficult time understanding why this has happened. The data outlined in this research sheds light on why e-books have seen such a decline in use, why bibliophiles have such a profound attachment to physical books, and what the publishing industry may do to make e-books more attractive to avid readers.

Summary of Project Findings

Humans attribute meaning to physical objects, and as a result expect a level of gratification by their use. This gratification includes recall of memories and emotions associated with those objects. Physical books supply this gratification to bibliophiles. The data shows that bibliophiles associate subjects such as childhood experiences, memories of significant events, places, and people with physical books. They describe vividly recalling emotions and memories when in contact with physical books.

The distaste many bibliophiles show for e-books is sometimes mistakenly attributed to a lack of interest in technology, but the research data indicates this is not true. Bibliophiles are users of technology and adopt new forms as they become available. What they reject is e-book technology as it currently exists. The format does little in the way of providing value for the investment, and content delivery devices have little-to-no merit as an object of reminiscence. It is this lack of permanence and memory-making that causes bibliophiles to stick with physical books.

The design intervention BookLinks provided valuable data and a positive response from participants testing the application. The functions they enjoyed were all related to making the experience more personal for the readers. Recording and sharing memories with others supplied the desired gratification bibliophiles desired with a physical book. While none of the test participants would probably trade their physical books for the BookLinks application, all expressed extreme interest in using such an application when earlier in the research they had rejected the idea of using e-books completely

Conclusions

A concept of bibliophiles accepting e-books is not an impossibility. The design intervention was able to facilitate responses that proves this. Bibliophiles are more open to the idea of digital formats that may be expected, but these formats have to add extra value to the experience in or for these individuals to take interest.

What is the answer to Why to people form a unique attachment to physical books over the digital alternative? They do so because physical books provide a connection to others and a reminder of place and time in ways that current digital e-book delivery systems are unable to provide. There is also a sensory component that is strongly associated with the experience of physical books, and until digital books can be infused with memory-making features that hold some level of permanence, physical books will remain the preferred choice of most bibliophiles.

Suggestions for Future Research

Future research should focus on reading habits and attachment across cultures. This study was primary focused on Western cultures and their reading habits. To receive a better data on how humans as a whole perceive and value books, this should include other cultures.

Another area of interest should be how attachment is formed to other types of analog media over the digital equivalents. These areas could include film, photography, music, and art. There are many areas surrounding these subjects that are rich in data. Other focal points could include how digital formats are judged monetarily versus their analog forms.

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Appendix A - Informed Consent

Survey – Online - Page 1 of the survey

Research Consent Information: Unique Emotional Attachment to Analog Books Over Digital Alternatives.

The purpose of this research is to examine the unique emotional attachment to analog books over digital alternatives. This study is being conducted by researchers from the Experience Design Department at Miami University. Open invitations have been posted on social networking sites such as Facebook and Instagram. Participation in this research is restricted to persons 18 years of age or older.

Completing the survey should take about 10 minutes. Your participation is voluntary, you may skip questions you do not want to answer, and you may stop at any time. The survey does not request information that would explicitly identify you. If you inadvertently include identifying information, such information will be removed from stored data. Only the researchers will have access to individual responses. Results of the survey will only be presented publicly as aggregate summaries.

If you would like to receive a report of the general results of this project please click on the link at the end of the Unique Emotional Attachment to Analog Books Over Digital Alternatives survey which will take you to a separate form to send us your contact information.

The research survey and the contact survey are not linked.

If you have any questions about this research or you feel you need more information to complete this survey, you can contact the lead researcher at celama@miamioh.edu

If you have questions or concerns about the rights of research subjects, you may contact our reviewing body: the Research Ethics and Integrity Office at Miami University at (513) 529-3600 or humansubjects@miamioh.edu.

---- Thank you for your participation, Sam Adams.

[Click here to proceed to the survey](#)

Potential Debriefing Statement: At the end of the survey

Thank you for your participation in this research about Unique Emotional Attachment to Analog Books Over Digital Alternatives. Your help is greatly appreciated.

If you have any questions about this research or you feel you need more information, you can contact me at celama@miamioh.edu. If you have questions or concerns about the rights of research subjects, you may contact our reviewing body: Research Ethics and Integrity Office at Miami University at (513) 529-3600 or humansubjects@miamioh.edu.

If you would like to receive (summary results) please click on the link below to go to a separate form to provide contact information. The research survey and the contact information form will not be linked therefore the research data will remain as anonymous as you provided it.

Appendix B - Participant Consent

Participant Consent

This study examines Unique Emotional Attachment to Analog Books Over Digital Alternatives. You are not required to participate in this study; it is entirely voluntary. Participants must be at least 18 years of age to participate. If you decline to participate in the study, it will not affect your employment or academic standing in any way.

If you choose to participate, here are some important things to know about your involvement in the study:

- The researcher will request to meet with you in-person for an interview lasting approximately 20 minutes. This interview will occur at a place of your choosing. The interview will be audio-recorded.
- The researcher will request basic demographic information about you. The researcher will not use your name or any identifying information about you in their reports about the study.
- You are free to decline to be interviewed or to end your participation in the interview at any time.

You have rights as a participant in this study. If you have questions about the study, please contact the lead researcher, Mark Cela, by e-mail: celama@miamioh.edu.

Miami University's Research Ethics & Integrity Program has reviewed and approved this study. For questions or concerns about your rights as a research subject please contact the Research Ethics & Integrity Program at Miami University: (513) 529-3600 or humansubjects@miamioh.edu.

I _____ agree to participate in this study for purposes outlined above. I give my permission to be interviewed and for the interview to be audio-recorded.

Date _____

Appendix C - Google Hangout Consent

Participant Consent

This study examines Unique Emotional Attachment to Analog Books Over Digital Alternatives. You are not required to participate in this study; it is entirely voluntary. Participants must be at least 18 years of age to participate. If you decline to participate in the study, it will not affect your employment or academic standing in any way.

If you choose to participate, here are some important things to know about your involvement in the study:

- Interviews conducted via Google Hangouts will last for approximately 20 minutes at a time of your convenience. The interview will be audio-recorded.
- The researcher will request basic demographic information about you. The researcher will not use your name or any identifying information about you in their reports about the study.
- You are free to decline to be interviewed or to end your participation in the interview at any time.

You have rights as a participant in this study. If you have questions about the study, please contact the lead researcher, Mark Cela, by e-mail: celama@miamioh.edu.

Miami University's Research Ethics & Integrity Program has reviewed and approved this study. For questions or concerns about your rights as a research subject please contact the Research Ethics & Integrity Program at Miami University: (513) 529-3600 or humansubjects@miamioh.edu.

By submitting your email and clicking "Continue" you agree to participate in this study for purposes outlined above. I give my permission to be interviewed and for the interview to be audio-recorded.

Appendix D - Interview Questions

Interview Questions

Interviews will be conducted using the following questions:

1. What is your age?
2. What is the nearest city or town to where you live?
3. What are the types of things that incite you to read a book?
4. Think about the physical books you own. Once you have read these books, do you keep them?
 - a. Where do you store the ones you keep?
 - b. Where and why do you get rid of books you do not keep?
5. Are you more or less likely to get rid of a book that was given to you by someone you know?
6. Describe your ideal reading scenario (place, time, environment, type of book, etc.).
7. Think about your book reading habits for a second. When you read a book, do you associate the book with events that were happening in your life at the time you read it?
8. What is your experience with e-books?
 - a. Do you believe e-books hold the same personal value as a physical book?
 - b. Do you believe e-books should cost the same as a physical book?
9. If you were given the choice between a free e-book and a free physical book, which would you choose and why?
10. Have you kept any books from your childhood? Why?

Appendix E - Information Sheet

Attachment to Analog Books Information Sheet

Greetings! I am Mark Cela and I am a student at Miami University in the Experience Design program. My faculty advisor for this research project is Dennis Cheatham. Thank you for choosing to participate in the Unique Emotional Attachment to Analog Books Over Digital Alternatives study. Below is some important information about this project.

Who is doing the study?

This study is being done by researchers from Miami University, who are interested in learning more about why people become attached to analog books when digital books are readily available on most mobile devices.

What is the purpose of the study?

The purpose of the study is to more clearly understand emotional attachment to analog books over e-books.

Why am I being asked to participate?

You are being asked to participate because you read books recreationally and have experience with both analog and digital book formats.

What kinds of questions will be asked?

Questions will be about your perspective and insights on books, attachment to objects, and your feelings on e-books. There are no wrong answers. We want to learn about your unique experiences and viewpoint.

Do I have to participate?

Participation in the study is voluntary. In particular, we anticipate your participation will have no effect at all on your daily activities. If you decline to participate in the study, it will not affect your employment or academic standing in any way.

How long will it take?

An interviewer would like to meet with you in-person for an interview that will take approximately 20 minutes. We can conduct the interview wherever is most comfortable for you to meet. You may decline to answer any questions for any reason.

How will my answers be used?

The study results will be written into a report which will be shared with other researchers, professionals who support people in making more enjoyable experiences for consumers who prefer analog to digital media, and in academic magazines. The results will also be shared with those who participated in the study. We believe the results of this study will provide important information that will help people experience digital media in a more tangible way.

Appendix F - Survey Questions

Survey Questions

Qualifying Questions:

1. Are you 18 years of age or older?

Yes No

2. Are you involved in reading at least one physical book a month?

Yes No

3. Did you have access to electronic reading hardware such as a smartphone, dedicated e-book reader, or computer between the years of 2007 – 2017?

Yes No

The survey will be comprised of the following questions:

1. What is your age?

2. What is the nearest city or town to where you live?

3. Do you sell or give away objects with the condition that if the new owner sells or gives it away that they must sell or give it back to you?

Never		Sometimes		Always
1	2	3	4	5

4. Do you ever considered how an object feels when you consider getting rid of it?

Never		Sometimes		Always
1	2	3	4	5

5. Do you keep media such as VHS or music cassettes, CD's, 8-Track tapes, or vinyl records even if you no longer possess the devices to play them?

Never		Sometimes		Always
1	2	3	4	5

6. Do you keep broken objects even though it has no chance of being repaired?

Never		Sometimes		Always
1	2	3	4	5

7. Are you more or less likely to part with an object from your childhood?

- a. More likely
b. Less likely

8. Would you consider yourself an early adopter of new technology? Do you like to buy new technology before anyone else?

Never		Sometimes		Always
1	2	3	4	5

Appendix F - Continued

9. Are you more likely to adopt new technology if you know someone who has already experienced it?
- a. No
 - b. Yes

10. Do you tend to adopt new technology only after the technology you currently use becomes obsolete?

Never		Sometimes		Always
1	2	3	4	5

11. Do you feel an e-book should cost as much as the same book in print form?

- c. No
- d. Yes

12. Have you regretted purchasing an e-book because you would have liked to have loaned the book to a friend or family member?

- e. No
- f. Yes

13. How many books do you read per year?

- a. < 10
- b. 10 – 20
- c. 21 – 30
- d. 30 <

14. Do you sell or give away books when you are done reading them?

Never		Sometimes		Always
1	2	3	4	5

15. Do you display your favorite books in your home?

Never		Sometimes		Always
1	2	3	4	5

16. Are you ever been affected emotionally by the death of a character in a book, such as crying, depression, or anger?

Never		Sometimes		Always
1	2	3	4	5

17. Has the content of a novel ever influenced how you act or dress?

- e. No
- f. Yes

16. Take a moment to think about your experiences with regard to reading books. What are some significant memories that you strongly associate with a book, and as a result has that affected your desire to keep a physical copy of that book?

Appendix G - Website



WELCOME.

THANK YOU FOR TAKING THE TIME TO
PARTICIPATE IN MY RESEARCH.

This survey is part of a study entitled *Unique Emotional Attachment to Analog Books Over Digital Alternatives*.

The purpose of my research is to attempt a deeper understanding of why people still love physical books when there are many different way to consume the written word.

The survey should take no more than 10 minutes, and will provide valuable insight for my research.

CONTINUE

THEBOOKSTUDY.ORG

WELCOME

Please read the following:

RESEARCH CONSENT: UNIQUE EMOTIONAL ATTACHMENT TO BOOKS OVER DIGITAL ALTERNATIVES

- The purpose of this research is to examine the unique emotional attachment to analog books over digital alternatives. This study is being conducted by researchers from the Experience Design Department at Miami University. Open invitations have been posted on social networking sites such as Facebook and Instagram. Participation in this research is restricted to persons 18 years of age or older.
- Completing the survey should take about 10 minutes. Your participation is voluntary, you may skip questions you do not want to answer, and you may stop at any time. The survey does not request information that would explicitly identify you. If you inadvertently include identifying information, such information will be removed from stored data. Only the researchers will have access to individual responses. Results of the survey will only be presented publicly as aggregate summaries.
- If you would like to receive a report of the general results of this project please click on the link at the end of the Unique Emotional Attachment to Analog Books Over Digital Alternatives survey which will take you to a separate form to send us your contact information.
- The research survey and the contact survey are not linked.
- If you have any questions about this research or you feel you need more information to complete this survey, you can contact the lead researcher Mark Cela at celams@miamioh.edu, or thesis advisor Dennis Cheatham at cheathdm@miamioh.edu.
- If you have questions or concerns about the rights of research subjects, you may contact our reviewing body: the Research Ethics and Integrity Office at Miami University at (513) 529-3600 or humansubjects@miamioh.edu.

----- Thank you for your participation, Mark Cela.

By clicking Proceed to Survey you agree to participate in this study for purposes outlined above.

PROCEED TO SURVEY

Colophon:

Typefaces used: Times New Roman, Times New Roman Italic, Times New Roman Bold

Layout: Adobe InDesign

Graphics: Adobe Photoshop, Adobe Illustrator

Application mock up: Adobe XD

Article reference: Bookends

Tablet: iPad 4th Generation

Computer: MacBook Pro 15" with dual Dell 27" monitors

Storage: Drobo & Western Digital

Audio Recorder: Tascam DR-40 Linear PCM Recorder

Sketching materials: Pentel Graphgear 1000, Copic Sketch & Classic Design Markers