For the Love of Books: A Furniture Solution for Transient Bibliophiles

Sarah Wolfsont

Follow this and additional works at: http://scholarworks.rit.edu/theses

Recommended Citation
FOR THE LOVE OF BOOKS

A FURNITURE SOLUTION FOR TRANSIENT BIBLIOPHILES

by
Sarah Wolfsont

A Thesis Submitted in Partial Fulfillment of the Requirements for the Degree of Master of Fine Arts in Industrial Design

School of Design
College of Imaging Arts and Sciences

Rochester Institute of Technology
Rochester, New York

July 24, 2015
Committee Approval

Stan Rickel, Graduate Director
Industrial Design
School of Design
College of Imaging Arts & Sciences
Rochester Institute of Technology

Alex Lobos, Associate Professor
Industrial Design
School of Design
College of Imaging Arts & Sciences
Rochester Institute of Technology

Amit Ray, Associate Professor
Department of English
College of Liberal Arts
Rochester Institute of Technology
Abstract

The goal of this thesis project was to design a physical object to help young adults relocate a small book collection to a new housing situation. The underlying investigation deals with books as a vehicle for expressing identity, the influence of digital texts on the book collection, and the physical burden of transporting a collection of physical books. The project’s final form is a leaning structure that supports 3 book display surfaces that hang from a cross bar. It can also be collapsed, the displays worn as backpacks, and the structure easily shouldered between two people.
Preface

This project was started on site at RIT in the winter of 2010. Although all of the research and much of the design process was accomplished during that time, the completion of the project happened throughout 2013-14 in Boulder, Colorado. Since my location in Colorado lacked a wood/sculpture studio in which to build the final working prototype, I collaborated with fellow RIT graduate, Jacob Levek, to craft the final prototypes of the project. Thanks to him, and some mediocre leatherwork on my end, it’s finally reached a reasonable conclusion.
## Contents

### The idea
1. Inspiration
2. Exploration
3. Observations & Findings
4. Uncovering the Shared Experience
5. Observations & Findings

### The problem, defined.
6. Call to Action
7. Defining the Design Problem

### The solution process.
8. Creation Process
9. Precedent and visual inspiration
10. Ideation
11. Intermission
12. Prototyping
13. User testing
14. Final Prototype
15. Conclusion

### Reference
16. Appendix
17. Bibliography
18. Review of Literature
The idea.
Inspiration

A good book can be a way to escape into a fantasy, or start a conversation with a stranger. Books can also be points of pride, accomplishments of reading or writing. It’s not surprising then, how often people think of physical books as mementos, or ascribe significant personal value to them. But how is that whole system of meaning and ownership affected by digital books? And how do you handle a book collection when you relocate frequently? Physical books, despite their personal and cultural value, can be a bit of a burden, especially when there are seemingly better options.

I began this thesis project inspired by a personal problem: What should I do with these beautiful books I’ve been collecting? As a designer, I have a knack for large, colorful, illustration-heavy objects. The kind that are great to show off, but challenging to schlep from apartment to (small) apartment while making my way through the world. Surely, I thought, I can’t be the only person with this problem.

Although I was personally invested in finding a better solution to the book-transportation/ownership problem, I needed to know if this problem was shared in a way that the solution would benefit more than just me. I needed it to be something more universal than a bandaid for my own problems. I needed a valid design problem.

Needing to know if this was a shared frustration, I casually asked around, to see if this situation was familiar to anyone else. Friends and acquaintances (in my given self-selected circles) admitted to also dealing with the moving-a-book-collection challenge. It may seem like a superficial and insignificant problem, but young people often don’t have much in the way of material things, especially those of the meaningful sort. As it turns out, a collection of books (even a small one) can be one of the most significant things a young adult owns.

My goal with this project was to examine the significance of physical books among a young, educated, and increasingly digital group of people that move
with greater than average frequency. Quick verbal validation led me to believe that it’s a worthy area of study, but I needed confirmation and clarification: Do research studies about the human condition indicate meaningful objects to be important? What about transporting a collection of books is challenging?
Exploration

A quick inquiry into the existing literature made clear that my topic was too narrow to be covered at length. In order to understand the bigger picture, ‘The emotional relationship young people have with their book collections in the 21st century’ needs to be divided into more approachable parts.

Since my personal experience was what inspired this design problem, I need to seek validation; I need to know if other people share the same need. For this, secondary research is sufficient. It’s not necessary to prove ‘beyond a reasonable doubt’ that this thesis is exploring a legitimate design problem. There are no quantitative qualifications to establish the valid from the senseless, only that there is a shared human experience that can be improved by the processes of design.

Reading related literature and academic studies, I can better define a handful of more specific topics:

Based on recent studies...

What is the behavior of young people when it comes to owning texts, regardless of format?

Why, and with what frequency, do young people relocate?

In addition to the logical validation, the design problem needs emotional validation. As design needs to address a shared human experience, the designer
needs to empathize with the circumstance. Often designers interview users and perform a shorthand version of ethnographic research. In this case, my personal experience is also the one I intend to share—the better I can understand my experience, the better I can empathize with others.

To become grounded in my own experience of book ownership I decided to take an (amateur) auto-ethnographic approach. While technically autoethnography is considered “research, writing, story, and method that connect the autobiographical and personal to the cultural, social, and political”, it is my assertion that a self-awareness of interactions at the individual object level (for instance, with a book), suffice for most design processes.¹

Of the two types of autoethnography, analytical and evocative, the evocative approach most closely parallels the design process. In fact, there are places within the expression of evocative autoethnography where the lines of art and social science become blurred.

The goal of the evocative approach is to create “narrative presentations that open up conversations and evoke emotional responses”.² However, unlike the autoethnographic goal of pulling the reader into a shared emotional experience, the goal of design is to propose an alternative, hopefully improved, experience.³ It’s my goal that the product of this project is a form that addresses a better moving experience that enhances the emotional relationship a person has with their book collection.

¹ Ellis, Carolyn. (2004). The ethnographic I: A methodological novel about autoethnography- Walnut Creek: AltaMira Press, (p. xix)
OBSERVATIONS & FINDINGS

The following are thematic patterns discovered by way of both secondary research and autoethnography. The patterns are listed in two groups: concrete, documented concepts, and abstract, emotional observations. When not attributed, findings are the result of autoethnography, or self reflection of lived experience.

THE CONCRETE

Young people move more frequently than others.

Moving as a young person is different than moving as a family, or a more established single adult. On one hand, young people move more often than any other age group: people 18-29 move twice as often as people 30-49, and three times more often than retirees. For college-educated young people, these moves are tend to be local to their college or longer distance moves in search of work after graduation. This confirmation hit close to home, as these were among the reasons for my Pile Of Books.

Moving companies are expensive.

Another aspect that differentiates how young people relocate is the availability of resources. In my personal experience, moves almost always took place on my own. Sometimes friends would offer their help, but never did I, or anyone I’ve come across, pay help with packing their things. Help packing is seen like hiring out your housekeeping. Sure, it nice to have someone do it for you, but in exchange you’re giving them a piece of your privacy. Because of this private space, and our intimacy of the things that occupy it, packing up your worldly possessions for a move is seen as a personal responsibility.

Taking on that personal responsibility is exhausting. It involves many trips back and forth, as many hands make like work (and only two hands is a pain in the ass). From experience, there’s a standard cattle call for moving help between friends. The person moving house bribes friends to help out with pizza and beer. While this speeds up the process, moving is still a pain that no one wants to deal with.

**A book collection is heavy.**

For young people, and anyone else that bears the responsibility for relocating their own things, there is not only the joy of connecting with each object, but the reality of its’ presence; this object is going to be a physical burden once it’s packed up.

Books, as individual objects have a familiar weight. We’re used to holding one, maybe 3 at a time, but to hold 30 or more books is not something we have a physical understanding of. Mostly because carrying 30 books is an unwieldy, terrible idea.

In addition to the weight of a book collection, the other realization is of its’ mass. It takes a lot of boxes to pack up a book collection. And if you’re relocating your own objects, there will probably be more, smaller boxes. Unlike early lawyers who could hire someone to tote around their cases of legal reference, the rest of us need to find a way to transport the weight of books up stairs, into cars, or onto trucks.

Since it seems uncommon for young people to hire movers, they have the added experience of carrying the weight of The Book Collection themselves (in addition to all of their other belongings). But, how much of a burden is that? I certainly needed to dive deeper into this, as it seems like a very subjective finding.

**We don’t need as many books as we used to.**

When I started this project, in 2010, the iPad was just announced. There was a flurry of concern about the “future of books”. In the past 5 years, it’s been made clear that it’s really nothing to “worry” about, we have seen the shift in preference for digital quick reads and textbooks, the book-as-object is still doing strong.

---

What this does mean, however, is that we try to only keep the important books. We don’t need the dictionaries or reference manuals anymore, as it’s much easier to ctrl+F than to find the index page, but we do need the ones that are near and dear to us.

In 2015, content feels ephemeral. There is so much of it, and yet it will all be replaced tomorrow with more. Therefore, buying a physical book, choosing to have the physical presence of a text, it considerably more intentional than it used to be.
THE ESOTERIC

The codex has many layers of significance

One aspect of a text that makes it unique from other cultural products is that it carries many layers of meaning simultaneously.

**Narrative**

Most basically, a text contains meaning in its narrative. The words written by the author create a vision of a specific world.

**Historical, published context**

When a text is published, it exists in historical moment. The text will initially be consumed by contemporaries, but always analyzed with reference to the time and context in which it was published.

**Current cultural understanding of the historical eras of both publishing and narrative setting**

The consumption of a text is itself an experience. Whether read by the author’s contemporaries, or descendants many generations later, the act of reading the same text creates a common experience.

**The shared experience of having consumed a specific narrative**

The common experience of a book’s narrative can be shared through recognition. Upon recognizing that we have read the same book and experienced the same, unique narrative, I know we can relate to a common subject.
The physical design of the object, often implying a book cover design

A book’s narrative can be recognized by its’ visual appearance. The size, cover style, and title are often unique to each narrative and could easily be recognized by someone who has read the same title.

The sum meaning communicated by a visually displayed collection of narratives

The visual display of books communicates a unique collection of experiences that can be recognized by others and serve as an aspect understanding another person’s perspective of the world.

People use book displays to project an identity.

Personal fashion is often used as an example of how people express their self-created identity in public. Looking closely at the transition of clothing from functional to fashionable, design historians have focused on the relationship between a person’s idealized identity and their style of dress. Often referred to as “conspicuous consumption”, people in the early 20th century began to dress aspirationally; they dressed themselves for social class of society they wanted to be recognized in.

Communicating your ideal place in society is a very public way to project a sense of identity. However, it’s been established that people also need to communicate their idealized identity to themselves, too.

The Meaning of Things, a foundational study that closely examined the relationship between people and their personal objects, asserts that the same self-awareness that creates our identity requires objects. In fact, we might not even be able to understand ourselves without them.

6 An Introduction to Design and Culture, p15-30
7 Ibid
One could never attend to all the feelings, memories, and thoughts that constitute what one is; instead, we use representations that stand for the vast range of experiences that make up and shape the self and enable one to infer what the object of self-awareness is. ...self-knowledge is inferential and mediated by the signs that compromise language and thought.  

Since we can’t simultaneously conceive of all the components that make up our understanding of self, we use objects as a shorthand; we abbreviate our past with symbols. But what about our future? What about who we want to be?

**The visual presence of personal books is emotionally valuable.**

Packing up your worldly possessions for a move often involves putting things in boxes. These boxes, while just temporary containers, hide the visual trigger that reminds us of past experiences, values, and aspirations. When objects become self-selected vehicles to trigger a part of an active identity, not seeing it can potentially affect how you conceive of yourself. 

Being ‘out of sight, out of mind’ can potentially have a negative impact on both the process of reaching goals and our image of self based on past achievements. According to the Meaning of Things study, people also use objects to indicate an aspect of who they aim to be. In the study, participants were asked about the meaning of personal objects in their possession. After noting all the objects, groups were made based on common significances. One group was a collection of objects that represented ideas about an individual’s values. This category, dubbed the *Embodiment of Ideals*, captures a group of objects that trigger thoughts about “personal values, aspirations, goals, and achievements”. Of this mixed group of objects, representing our best selves, twenty-seven percent are books.

If books represent a future ideal version of ourselves, I wanted to see if there were any themes within my target audience: young adults. Although I didn’t find research on that specific subject, *The Meaning of Things* did make one mention on a related topic: professionals and their book collections. The study mentions the fear and insecurity professionals claimed felt when they didn’t

---


9 Ibid. p.20-80

10 Ibid. p.69
have their books around. When asked how a professional would feel if they were permanently deprived of their books, one participant said, “...that would be terrible. I would be very upset. It has something to do with my sense of being O.K. I am wrapped up a lot in those things.”

We put books on public display to communicate our identity.

When Facebook was first made public in 2003, it was largely driven by the user profile pages. Users were prompted to use this opportunity to talk about themselves and their interests. This included things they liked, such as music, books, and movies. This was, in a way, an early, digital version of stepping into someone’s personal space. Facebook was asking you to share what was on the bookshelf in your living room. The little blinking cursor begged, “what do you want to share about yourself with others?”

In contemporary life, bookshelves are often considered decor. In any given year, IKEA sells 27.2 Million Billy Bookshelves. Books-objects are bought after discovering favorite digital texts, in order to visually highlight an interest in physical space. Maybe because we’re all guilty of it, we continue to participate in the social tradition of decorating our homes with books that represent interests, goals, and values, in an attempt to create a visual shorthand of who we are.

But what about the books that correlate with the piece of ourselves we like to keep private? This notion of the ‘public’ bookshelf versus the ‘private’ bookshelf was, at this point, mostly an assumption. Sure, I had differentiated between the more private books and those that were coffee table worthy, but I wasn’t sure if it was a widespread phenomenon.

Although I didn’t find research specifically regarding self-expression through the public bookshelf, I came across parallel subjects. Erving Goffman, a 20th century sociologist, who dedicated most of his career to studying the interactions of everyday life, framed each of us as actors playing out our own story. In his book *The Presentation of Self in Everyday Life*, Goffman analyzes interpersonal exchanges, framing our choices as actors, selecting props and

11 Ibid. p. 274
12 Facebook Photo (appendix 1)
costumes in order to play out an idealized version of ourselves. Following this thesis, books on a bookshelf are the props we want to be seen with, differentiating between the ones that showcase our idealized self and those that, maybe, we are too ashamed of to share.

The public bookshelf is also a key player in the defined situation. Just like the facebook profile, the shared bookshelf is a part of an interaction that has been culturally agreed upon. We all assume that the books displayed in public view are meant to communicate something and that we are there to listen to them; they have been chosen to showcase an ideal self we are asked to perceive.

**Packing up your own belongings is emotional.**

Something happens when you’re the one responsible for touching every one of your possessions. In his book Emotionally Durable Design, Jonathan Chapman looks human experiences with designed objects as an opportunity to “engage with the world on both rational and emotional levels.” Packing and unpacking our own possessions is a considerably un-designed experience, yet it still has the effect of engaging us with our lives in an emotional way. Packing up all of the objects that make up our home environment can bring back floods of memories, goals, and stories that we don’t consider in our everyday lives.

But who is to put a qualitative label on a jog down memory lane? While I could have thoroughly researched all of these angles, I decided to take a political, poetic license on this topic:

I assert that having an aesthetic experience with the objects in your life is a good thing. It can present us with a sense of self-awareness we most often ignore. If our acquisition and ownership is intentional, we are confronted with a past self that we need to address. If it is not intentional, we may bear witness to the waste we have created in our own lives.

---


Uncovering the Shared Experience

Self-reflexive observations were a good start; they established major themes and prompted new questions. To widen the pool and better understand the commonalities of the shared experience, I defined a target audience. Expectedly, the target audience looks a lot like I do.

TARGET AUDIENCE CHARACTERISTICS

- **Young adults: 20-30 years old**
  - Frequent moving patterns

- **Male or Female**
  - No difference based on gender

- **Owns more than 20 books**
  - Because less than that fits in a couple of backpacks

- **Completed some (or all) of a 4 year degree**
  - Probably values education

- **Aspiring or current professional**
  - Higher chance of long term aspirations

- **Frequent mover (at least once every 2 years)**
  - Threshold to make this interesting

The basic demographic information is relatively straightforward. From that I could easily screen potential participants on whether or not they defined themselves as owners of a book ‘collection’. The more challenging aspect of the target audience is their frequency of moving. I wasn’t sure if the frequency I estimated would be enough to give the participant the experience of packing...
and moving a book collection, but it seemed like a good start.

Since this study was done while I was a current graduate student, finding professionally aspiring young adults that had moved frequently was all too easy. As the organizer and recruiter of the research, I began by casually interviewing friends and classmates that fit the description. While my recruiting wasn't scientific, I was able to find a balance between genders, living situations, and book ownership habits. The group was more skewed towards people that were either in a graduate program, or recently finished, but I didn't see this as an issue since I wanted to dig into the aspect of the professional significance of books.

**RESEARCH METHODOLOGY**

The sample size of 6 participants was a small one, but it aligns well with the Neilsen-Norman group’s theory on user experience research.\(^{18}^{19}\) Although this work was more ethnographic in nature, I felt as though the small sample would serve the same purpose: confirming my assumptions about behavior and needs, and also looking for repeat observations among the participants.

For the study, I did a home visit with each participant. I worked independently and asked them to lead me through their living area. I decided to take the approach of semi-structured interviews, as I had a good degree of background on the topic already. During the process, I asked contextual questions that echoed my background research, like “where did that book come from?” and “how long have you had it?”

---

18 See [Research Participants](#) in appendix.

OBSERVATIONS & FINDINGS

Much of what I learned during the in home visits came from observations, such as how books are displayed, stored, and leveraged socially. It was interesting to see how much these individuals considered the meaning of their most easily accessed books and the intentionality behind the placement. In addition, I was able to confirm many of my assumptions about the frustrations and issues of moving a book collection by asking about their more recent moves.

Throughout my ethnographic studies, a number of user needs and design thoughts stood out to me. I’ve noted these in my summary below and moved forward with them into the design phase.

Boxes work well for displaying books.

Unsurprisingly, most young people rely on very inexpensive and often used furniture to store their books. The most common is the rectilinear bookshelf, usually about three feet in width and about four feet high.

Anastasia’s shelf  Jeff’s Shelf  Katherine’s Shelf

The rectilinear shelf, in addition to being ubiquitous and easy to find on the cheap, responds well to the shape of the codex-book. By getting a little creative, books can be turned both vertically and horizontally, matching a personal
preference or maximizing the available space on the shelf. In fact, I was surprised to find how often books were turned horizontally, stacked within the shelf, even though the stack doesn’t take advantage of the vertical walls that normally prevent lined-up books from falling over.

**USER DESIRE**

*I want to arrange books both vertically and horizontally.*

Maybe it’s because they’re generally considered as a display vehicle, or maybe it’s because they were acquired second-hand, but for all of my participants, the shelf itself was unimportant. The bookshelf was a tool to efficiently use a limited amount of space to display their books. Almost all the participants lived in shared housing, meaning that their room was simultaneously their personal living room and office. Because of this, they were limited in square footage and universally without built-in bookshelves; the thrifted book displays were the easy way to both display their collection and maximize floor space.

**USER DESIRE**

*Take up as little floor space as possible.*

It’s was my guess is that the significance of furniture is correlated with age and value, which would mean that thrifted bookshelves have little meaning. In a sense, this situation is an opportunity: if there was a design solution inexpensive enough to meet the user’s budget and also offer the possibility for a more significant relationship with the furniture itself.

**DESIGN CONSIDERATION**

*How can the design solution be a significant object in it’s own right?*

One research participant shared a very different strategy for moving books that I thought was rather ingenious. She follows the same steps of placing books into containers for moving, but instead of using boxes to transport her books she uses fabric bags. While this idea isn’t earth shattering, it addresses the problem of the ‘too-big’ box and encourages faster unpacking (especially if you need those bags for grocery shopping).
Katherine's practical design solution struck me as a Eureka moment. Books didn't have to be moved in boxes! Although the shoulder strap on the bag doesn't seem like the best strategy for carrying a heavy load, I knew this idea had a lot of potential.

**DESIGN CONSIDERATION**

*Could a lightweight fabric container carry books?*
Bookshelves aren’t just for books.

Of all the bookshelves I saw, not one was without a sentimental non-book item. Sometimes these items had significant meaning, but that wasn’t always the case. More than anything, people took advantage of the available negative space created by the extra (possibly unnecessary) depth of the shelf. Again, maximizing space was a strategy. Where else could someone put tsotchkes in a compact room with no built in shelves. Another user consideration when it comes to displaying significant objects, is the limitation of a rental agreement. Often people were hesitant to put extra holes in the walls of their room, as the action might result in less of their initial deposit being returned.

Moving sucks.

When I asked people about the subject of moving there was a palpable stress in their reaction. The activity of moving incurs stress, but it seems as though the logistics of moving a book collection can cause more stress than a wardrobe of clothes.20 The reason for this is obvious: books weigh more. About half the participants shared my “I should have used smaller boxes” experience, while others gave dramatic facial gestures indicating a bad experience.

The dance of moving books seems to follow a basic pattern:

First, remove books from the shelf. Place books in boxes. Boxes should be on the small side, but if not available, larger boxes should be padded with lightweight objects like clothing.

Carry the book boxes out of the apartment to a car (which is often a sedan). Once full, drive to the new location. Remove the book boxes from the car, carry them to the place in the new residence where you think they will live. Wait for the bookshelf.

Transport the bookshelf separately because it won’t fit in the car with other items. If too large, leave it behind for the next resident. Moving the shelf takes 2 people, as a bookshelf of useful size is made of MDF or fiberboard. Sometimes the move is done in 2 waves: one with the mover transporting smaller things independently and one with a group of friends to help move the heavy items.

Once the bookshelf is available in the new space, unpack in. Use the following weeks to shelve the boxes of books. If lucky, it will make sense to unpack all of the books. Otherwise, a box of books will remain packed away, potentially because there was a bookshelf that couldn’t be moved to the new location. This box of packed books is likely to end up in the back of a closet, or an attic, only to end up “out of sight, out of mind”.

Feel like you’re missing something, but can’t quite remember what that is.

These moving stories inspired the following considerations and desires:

**USER DESIRE**

*I want the design to be easily moved and transported by 2 people. Ideally 1 person.*

**DESIGN CONSIDERATION**

*How can the design solution eliminate the step of removing books from the shelf, when they’re only to be put back on after moving?*
**DESIGN CONSIDERATION**

How can the design solution minimize the “out of sight, out of mind” effect?

---

**Packing isn’t as important to others as it is to me.**

Based on my background research, I had a hunch about the significance of the packing process and the effect of interacting with the collection. When I spoke with my participants, I asked how moving had affected their thoughts and feelings about their collection. I wondered if people regularly gave away books they felt to be superfluous? Did they reconnect with books that had sentimental value?

Counter to my assumptions, no one talked about the significance of packing. While it’s possible that there is an unspoken, almost poetic experience that’s hard to articulate, I was surprised that no one made an attempt at describing it. It made me wonder if industrial designers just have a much stronger inclination towards relating to inanimate objects, or if the experience of relating to objects wasn’t memorable enough to describe.

Reason aside, it was clear to me that the design solution didn’t need to focus too heavily on the process of experiencing each object in the collection while packing. In a way, not needing to address the complicated problem that is emphasizing individual object relationships simplifies my design. Although I appreciate making the design problem easier to digest, I was partially disappointed that sentimentality wasn’t an important factor in the design solution.

---

**We intentionally separate books in a public/private duality.**

Even though participants didn't cite a specific moment of embracing or reviewing each book in their collection, it was clear that the books on the shelves were arranged thoughtfully. As a general rule, if there were two rooms to store books, the more explicit and sentimental books were located in the more private space.

What interested me more than the division between public and private was the categorization and location of the public books. As I noted in my background research, books have two levels of meaning: the narrative content of the text and the social implications of one who consumes the content. Books that were most prominently placed were ones that spoke to the owners’ aspirational self,
confirming the findings of The Meaning of Things study.

‘Pride books’, the most aspirational subset of the collection, were often grouped together in smaller categories. Sometimes these categories had an ‘extended’ section containing less important books; second string books were placed in less prominent places, much like the generic brands in a grocery aisle. Although the reasons for the public display of ‘pride books’ were numerous, everyone I spoke with consciously considered their placement, often choosing eye-level shelves, or ones that invite an onlooker to casually examine the collection.

Rachel’s display of ‘pride books’ made more accessible and inviting by de-emphasizing their preciousness.
This phenomenon of ‘pride books’ was shared among everyone I interviewed, no matter the size of the collection. It seems as though the book collection’s function (in part) is to declare publicly: “these are the books that define me”. It’s an understood aspect of the curated identity. Another element of ‘pride books’ that I found interesting was the quantity of individual books. It was clear that there are a limited number of books that truly qualify as ‘pride books’; the rest are just books. This last thought pushed me to consider how book collections might change in the coming years. Would people still keep ‘just books’ around? Or, would they focus their collections on ‘pride books’, since the physical presence is a tool for communicating identity?
DESIGN CONSIDERATION

How can the design solution highlight or emphasize ‘pride books’?
The problem, defined.
Call to Action

DEFINING THE DESIGN PROBLEM

A clear problem statement supports the creative design phase by defining necessary boundaries that require the designer to push beyond conventional forms. Problem statements can be as simple as to require an enlarged grip to fit more diverse users, to complex, almost theoretical bounds that result in abstract, fictional forms.

Following the same structure established in the findings of the user research, I began to reframe my inspiration as clear design problem that would imply the landscape of the solution.

Existential Meaning

The book-object has many layers of significance.

People use book displays to project an identity.

The display object itself is often meaningless

The visual presence of personal books is emotionally valuable.

We intentionally separate books into a public/private duality.

“AS A USER I WANT TO…”

...reinforce my identity by visually recognizing my meaningful objects

...curate my collection of publically displayed books
“AS A DESIGNER, I WANT TO CONSIDER...”

...how the design solution can highlight or emphasize 'pride' books?

...how the design solution can be a significant (ie. meaningful) object in it’s own right?

Physical Display

Bookshelves aren’t just for books. They are also for photographs, objects, and other signifiers.

Floor space is of a premium

Modifying walls is to be avoided

“AS A USER I WANT TO...”

...arrange books both vertically and horizontally.

...maximize floor space.

...display objects and photos without hanging additional shelving.

“AS A DESIGNER I WANT TO CONSIDER...”

...alternatives to the box-like container that conventionally holds books

Moving Preparation

Packing up your own belongings is emotional, but not seen as an enlightening experience.

A book collection is heavy.

Boxes work well for both displaying and carrying books
"AS A USER I WANT TO..."

...make the packing process as painless as possible

"AS A DESIGNER, I WANT TO CONSIDER..."

...how the design solution could eliminate the step of removing books from the shelf before moving, so they don’t need to be put back after moving?

...how other materials, like lightweight fabric, can act as a container for container carrying books?

...the significance of the packing process, even though it wasn’t mentioned by users.

...how the design solution can minimize the “out of sight, out of mind” effect after moving?

---

**Transporting**

Young people move more frequently than others.

Moving companies are expensive.

Moving sucks.

"AS A USER I WANT TO...

...easily move and transport my book collection with only 2 people. Ideally 1 person.

"AS A DESIGNER, I WANT TO CONSIDER...

...the physical experience of holding, carrying, and moving more than 10 books at a time.
From these major themes and light requirements, I wrote a statement that shapes the landscape of the design problem.

In the near future, ownership of digital texts will compel individuals to only keep physical copies of texts if they are emotionally significant. This new behavior will lead to ownership of fewer individual book-objects. Young people will continue to relocate to new housing situations, as job opportunities and social engagement is more of a priority than putting down roots.

Looking at this statement summary, I drafted a design call to action.

Design a device with an efficient footprint that functions primarily as a display mechanism for a small book collection with personal effects. The device must also serve as a vehicle and container for relocating the collection, requiring at most, 2 people.

While the design problem statement doesn’t include every last thought about a person’s psychology and logistics of moving, it does effectively sum up the problem in concrete terms to help lead to discovery within the design process.
The solution process.
Creation Process

PRECEDENT AND VISUAL INSPIRATION

Having seen the bookshelves of the research participants, I felt almost ready to begin my design explorations. However, I wanted some visual inspiration to work with to could help guide (and also push) me to a better solution.

DISPLAY

Since most of the photographs I took during the user research were of bookcases in their display state, I already recognized some of the patterns of organization in a rectilinear space. Knowing that people tend to stack both vertically and horizontally, I looked for images with the same pattern, but more extreme.

The images I was drawn to had a tendency towards wabi-sabi, emphasizing the
imperfect nature of an evolving collection. The effect seems to be in response to the surface; the collection appears haphazard in contrast to the consistent edges of the bookshelf. While I found the wabi-sabi effect endearing, I also thought it had an appropriate place within the design solution. Moving regularly challenges the feeling of home; new places can feel unsettled until a unique identity re-establishes the space. Establishing the feeling of ‘home’ is a process.

Ultimately, I wanted the final design outcome to allow for a quick way to establish the feeling of ‘home’. Designing a solution that enables a wabi-sabi effect to develop struck me as a good strategy. The challenge was how to design something that could have a sense of flawed-beauty, but can also be easily packed up and transported, potentially without a full disruption to the arrangement.

Another aspect of the display to consider was how to address the need for displaying non-book items within the same space. While this would be simple if the design involved a traditional shelf, what if it didn’t? What if there wasn’t a hard linear surface for frames to sit on? Through the search for visual inspiration, I realized that a vertical surface can be a display mechanism with the addition of minimal affordances, such as photo boards mounted with elastic straps that can keep track of ephemera.
MOVING PREPARATION

Unlike the more static use case of display, the act of preparing to move and the logistics of relocating have many moving parts. In order to better capture the system, I generalized what I learned throughout the research and created a fictional use-case that outlined the primary steps of the process.

Someone is moving across town; not a far distance, but enough to require books to be consolidated and transported in a small car.

The first step (which is also the same as the last step), is be Display: the resting state of the book collection and personal ephemera.

The second step is Moving Preparations, involving all steps necessary to ready the collection for transport.

The last true step is Transportation, moving the collection of objects, books, and the display mechanism to the new location.

In the fictional scenario I imagined, someone is moving across town and needs to pack their collection, if only casually. The obvious answer to packing is boxes. When we think of moving, there’s barely a beat before thoughts about cardboard and packing tape.

However from the research, I established that boxes are prone to two major issues: they become unwieldy very quickly, and worse, they’re strongly connected to the “out of sight, out of mind” effect.

A step up from the cardboard box is the milk crate. The biggest advantage of the crate is that it can serve as the display mechanism and also the packing/carrying case. The double-use approach seemed like the right direction; it eliminates the step of removing books from a shelf, only to put them back after
Another advantage of the milk crate is visibility of the contents. While I didn’t think visibility was necessarily required during the moving part of the scenario, it did help prevent the “out of sight”-ness that happens so easily in boxes. I wasn’t convinced that a milk crate was the design solution, but I felt as though considering its’ stronger aspects was a good place to begin my design work.

TRANSPORTING

The last step, and potentially most challenging aspect of the design problem, is physically moving the books (and other odds and ends). Having done this many times myself, I knew the most common solutions weren’t ideal. For instance, carrying boxes (or even milk-crates for that matter) can be hard for people of smaller stature. Regardless of height, the box-shape is especially cumbersome up and down staircases, a common situation for the people I interviewed.
While searching for alternative ways to lift and carry heavy loads, I came across the litter, or in more familiar terms, a king carrier. The litter requires at least two people to lift the load, which was within practical reason for my sample scenario. (Finding one person to help with moving is far more practical than finding a team of people.) It also functions both as a makeshift solution, or a highly crafted one. The rudimentary aspect of the sling-type litter appealed to me: it was simple, low fidelity, and incredibly functional.

21 https://www.youtube.com/watch?v=0HYsJcg13g, Moving Heavy Shit Up Stairs
Royalty transported in a litter.22

Improvised sling-type litters on the Bataan Death March in the Philippines in 1942.23

22 A History of Madeira, Plate 107, 1821, A history of Madeira: with a series of twenty-seven coloured engravings, illustrative of the costumes, manners, and occupations of the inhabitants of that island (Google eBook), Unknown (“a resident of the island”, published by R. Ackermann, London)

23 http://www.archives.gov/research_room/research_topics/world_war_2_photos/images/
Another alternative to carrying boxes is carrying bags, a solution shared with me by one of the research participants. Katherine’s moving strategy was to stack her books in reusable grocery bags and sling them over her shoulder. The grocery bag strategy was more flexible than boxes; carrying the load up and down stairs was much easier—you could still see! However, the bag was designed to be shouldered on one side of the body, causing strain. What about a backpack?

Hiking backpacks are designed to help a single person carry very heavy loads long distances and up (and down) inclines. Compared to boxes and milk crates, backpacks have soft sides held together by metal frames. Using a backpack solution for the book collection could allow for a single person to transport the weight, without requiring a second. The backpack strategy was definitely something I wanted to explore further in my design process.

24 Image sourced from jaywei80 on Flickr. Creative Commons license.
IDEATION

With much information and inspiration gathered, I felt better equipped to begin developing a design solution that could handle the display, storage, packing, and transport of a small book collection.

Although I recognized that boxes and crates weren’t flexible enough to serve all the purposes I outlined in my thesis problem, I started in a place I was familiar with and tried to push the boundaries as I went. I began thinking of the open box with a skeletal structure; something that could be taken apart easily like legos. The box gives a strong surface for the books to lean up against, giving the option of a wabi-sabi feel.

A skeletal box would be easy to collapse and pack up, potentially along with the books. The idea of a box with size permutations is akin to a modular approach to housing the collection. Modularity wasn’t a requirement that came out of my discoveries, but the idea attracted me since it would allow for flexibility when
it came to the number and sizes of books in the collection. It was also during this time that I was fascinated with furniture made from repurposed shipping pallets, a potential “DIY” solution that I thought would be attractive to the group of users I was targeting. Repurposed furniture is always less expensive and the connection with the object developed through its construction was something I found attractive in a situation where most furniture for this use is seen as disposable.

After the initial sketches, I recognized the boxes as too harsh and visualized a fabric wrapping the box. Fabric is able to signify the softness I wanted to imply in caring for the collection. Also, the way we manipulate fabric resembles wrapping, a much more caring gesture than placing books in boxes.

Before coming to a conclusion on either structure or material, I transferred my sketches to a miniature size using physical odds and ends. While the scale was different, it helped me feel out the solution and think through the physical challenges of manipulating weight within a designed container.
From working in 3 dimensions, I recognized that the softness of fabric was attractive to me. It allows for a more organic shape, shifting the wabi-sabi aspect from just the objects ‘on the shelf’ to how the shelf responds to the objects. While the fabric and nature of wrapping felt important, I pushed it a bit further with a few continued sketches that explored the stretching of the container itself. Using what I had available to me, which was a few old bike tires, I played with the box-stretch in different capacities. In a way it resembled the old fashioned leather book-straps used for carrying a few books to and from school. The stretch of the bike tubes was interesting, as it could potentially help stabilize the books during transport. However, it didn’t seem as functional when used as a display.
While my initial sketches established an interest in fabric and allowed whatever contains the book to move organically in response to the contents, I was no closer to resolving the more complicated aspect: how to move a bundle of heavy books. Even though I wasn’t resolved on how to approach the container aspect, I decided to explore designs for this other aspect of the problem. After all, there were a lot of mini-problems within the design and maybe I could compile a “best of” collection in the end.

Of course, the only problem with oranges and sushi rolls is that when they
weigh 50lbs, there’s no affordance to pick them up and move them. I shifted back to thinking about backpacks and how they could be useful. I narrowed my thoughts to the uber-practical, just to change gears; what would it be like to carry books up a flight of stairs solo, moving everything you own without any assistance.

I played around filling my available backpack with books, just to see what was practical. It turns out, weighing only 100lbs, I can carry about 16 books in a normal, school-style backpack. Some books were bigger, weighing in at 4lbs, while most were lightweight paperbacks at a ½lb. The weight of the books gave me something to work with that was more concrete, adding a constraint that would hopefully push me towards a solution.
The advantage of using fabric, or something moldable, while carrying a stack of books is that the books can align with the body. This is something a box could never do, not to mention how holding a box in front of you blocks your sight lines while walking up a flight of stairs. After a few quick iterations of this design (using real books and climbing stairs), I felt strongly that the backpack solution would be part of the final design. It seemed like the most practical way for an individual to carry a heavy load up stairs, while also including the warm feel of fabric I liked so much from my initial sketches.

The last challenge to work through was how to display a book collection, keeping in mind the final footprint of the structure. After recognizing that the backpack was my preferred carry strategy (at least for solo travel), I was more stuck on how to approach the structure. Stacking backpacks in piles was unelegant and just plain sloppy. But then again, I wasn’t sure how to address the weight involved. To manage about 50 books, the structure would need to hold 3 backpacks worth of books (give or take a few).

Somewhat stuck on the structure, I worked only in 3d sketches (using actual books), and pushed myself to come up with wacky ideas that might lead to something more useful.
The book tree can only hold a few books, but has a nice gesture and form when filled.

Playing with the weight of the book as a visual component.

Hanging individual books, impractical on this scale.

In an effort to reach a solution faster, I set-up a number of hanging scenarios around my work space. These sketches were smaller, using paper instead of real books, but I was still able to see the gesture while imagining what to do with the weight. The above sketch hung next to me for some time. The little hooks were like swings for books; they had a playful quality I liked. They were also more back-pack-like in their potential than many of the other hanging scenarios I played around with.

One day, while attempting to combine my “best of” design concepts so far,
it struck me to take these book swings and figure out what kind of structure could hold and suspend them the way they were. After a short while playing around in the shop, I came to my Eureka! moment for the project. Admittedly the draft wasn’t fully to scale and I didn’t have backpacks to hang from it, but I discovered the structure that would serve as the device to hold and display the back-packs.

Inspired and excited by the structure I made, I took a step back to envision the final design. The structure needed to be sound enough to bear the weight of about 50 books (assuming roughly 125lbs), but also light enough to be transported by one person (if that second friend couldn’t make it).

Looking at the final rendering, (before building a working prototype), I assumed it to be light enough for someone my petite size to carry as individual
pieces; no single component would be too heavy on its own. While the 3 elements of the structure could be connected into one solid, arched piece, it would likely be less stable and impossible to fit in a car, which I still strongly felt was one of my requirements. When drafting the rendering, I imagined each book swing could be used individually as a backpack, just like my early physical prototypes. However, as a group they could be carried like a king carrier, both people shouldering the full weight of the books as they were carried in or out of a living space.
The initial rendering brought my thumbnail sketch to life. Rectilinear surfaces would support the books themselves, so people would be able to organize and display in any way they see fit. The shelves, or “sleds” would hang from a cross bar at adjustable lengths.

How exactly the hanging mechanism and adjustable straps functioned was a question I planned to answer through the activities of prototyping.
INTERMISSION

Or, when I moved across the country, got married, got pregnant, and still hadn’t finished this project.

Somewhere between the end of the design process (as outlined above) and May of 2010, I neglected to come to a resolution on the design. The full scale prototype had not been built and I had been offered a job opportunity (with a built-in distraction).

Some 4 years later, compelled both by the dwindling 7-year window of completing the program and the discovery that I was about to have far less free time in my future, I picked up where I left off. While this isn’t the traditional way to complete any sort of design undertaking, it has still served me well and re-sparked my interest in designing for the physical world.

Since my current situation does not give me access to a woodshop, I reached out to a fellow RIT graduate to help me complete the wooden frame of the prototype. Jake Levek, a 2009 graduate from the Fine Furniture and Woodworking department and current woodworker, has lent his skills to the prototyping process. The following section outlines the production and refinement of the prototypes.
Picking up where I left off, I commissioned Jake Levek, a woodworker, to draft a prototype of my designs. Using the original sketches from Solidworks, I handed over dimensions anxiously waited to see the structure in person, knowing that it would be the only way to refine it.

REFINING THE DESIGN

The initial prototype of the wooden frame. It was much thicker and bulkier than I anticipated.
Evaluating the frame

Upon first seeing the draft of my early sketches, I was shocked by the scale. Only then did I realize that I hadn't taken out my measuring tape when looking over old measurements. The width of each “stick” was 3” square with a ¾” radius on the edge; it looked bulky and cartoonish. However, outside of the appearance, the components fit well together. The frame, standing about 5.5’ high, looked to be a good size to hold a few ‘book-swings’, and solid looking enough to anticipate their security.

I noted the aesthetic changes I wanted to make to the frame: Cut the width of the “sticks” in half so they would appear lighter, and change the edge radius to a small chamfer of about ⅛”. These measurements I planned to re-check later (since that was my true misstep) after I created the ‘book-swings’ to scale. After all, reducing the visual weight of the frame would be unhelpful if it was unable to support the physical weight of the books.

First mockups of the book-swings

Of all the components, the book-swings were the most complicated. They needed to hold weight for display, be wrapped up for transport, be easily attached to (and removed from) the frame, and last, but not least, used as an individual ‘backpack’ for the contents. With such an overwhelming set of requirements (not to mention the aesthetic goals I had in mind), I went ahead and mocked up the swing with inexpensive and easy to manipulate materials.
For the first version I used \( \frac{1}{8} \)" masonite cut to my 'best guess' proportions of 16"L x 10"D x 12"H, along with nylon webbing (most commonly used for outdoor gear), and a couple of cams to experiment with length adjustment. The first version of it was very rough, but helped me address a number of the functional problems with a design that had so many required functions. It was also inexpensive and quick to modify, so I could solve problems as I discovered them, without starting over on a new mockup.

The first issue to address was with the frame. Although I recognized that it was too thick and heavy-looking at first glance, it wasn't until I suspended a
practically-sized stack of books from it that I realized it was too low. With the current cross bar height at 60”, the eye level of books would be in the range of 45-50” off the ground. While there’s nothing functionally wrong with this, it felt lower than the expected height of a bookshelf. On the other hand, I didn’t want to raise it too high or it would be difficult to manipulate the frame and transport a collection like a litter.

After remeasuring the existing frame, I used simple trigonometry to create new dimensions for the two leaning sticks of the frame. The key was to maintain the geometry of the joint and only extend the lower part of the leg. The additional leg length would increase the cross bar height of just 6”, enough to give the books a higher eye-level and create a bit more floor space underneath the design.
Like the dimensions of the frame, I needed to see the book-swing in person to understand what about my drafted dimensions were off. While the length of 16” looked reasonable hanging from the wall (not to mention, containing about 20 books), the height of the sides intimidated the larger books I placed on the shelf. Even though I could change the container design to be more appealing by adjusting the shape and texture, the size still looked off. I decided the next version would have lower sides, showing off the pleasantly inconsistent heights of the books on the shelf. I also thought of adding a rounded edge to the terminal ends of the shelf to showcase the books inside. The 3” radius is a best-guess proposal that I would weigh in on after seeing the adjusted version.
Lower Container Sides

Current Dimensions  
Front

Target Dimensions  
Front

Need a directional change

Current Height: 12"
Target Height: 8"

Current Width OK: 16"
My first attempt at a support system for the book-swing worked well, but needed a lot of optimizing. The first draft had straps that were used as suspension triangles, but also ran underneath the length of the shelf to add support. The underneath length was important, as I anticipated it would do double duty as backpack straps if the unit was to be carried by one person.

The first issue with the nylon straps that I decided to address was the transition from the shelf’s hanging mechanism to the frame’s hanging mechanism. While the two straps looped together did the job, I didn’t like the visual effect of the twist. At some point the straps needed to change directions in order to meet one another. Unfortunately that resulted in a sloppy and visually distracting series of twists and turns.

The core of the transition problem was in the direction the straps needed to run from their source. In this case, they were both naturally parallel, but I forcefully twisted them in order to make a looped contact. To connect the parallel straps, I came up with a transition area that was composed of an S-hook and two D-rings (also called ‘triangles’). This strategy successfully aligned the loops based on their source, keeping the straps parallel. I wasn’t convinced this was the best, or final solution, but it was a step closer.

The downside to this solution I only realized after removing the hanging shelf from the S-hooks: S-hooks have a tendency to pop off, since they’re not fully
closed at either end. I decided to save this problem for later, as it seemed like a detail that could be addressed with upgraded hardware.

The other issue with the S-hook/D-ring solution was the shelf’s tendency to tilt backwards towards the wall. If I didn’t place the books in the exact center...
of the shelf, it would tilt almost 90°, books falling backwards off the shelf. I played around with the tilt for a few minutes, but didn’t have an immediate solution. Since I felt unsure how to correct the tilting backwards of the shelf-swing, I took a closer look at common swings.

In all my memories of swinging on swings, the most stable experiences were the bucket style seats for very small children and porch swings. Looking more closely at the hardware, it was clear that the solution was related to the suspension triangle that connects the swing to the ‘rope’. The triangles in the reference swings had sides of static lengths, unlike my mock up where the nylon straps could slide through the D-rings.
My next modification was to account for the discovery of maintaining constant lengths of the support triangle's sides. I quickly did this with a safety pin, just to see if it made the difference.


Not surprisingly, that was the trick. The safety pin minimized the tilt that happened when books slid all the way down into the corner of the swing. While the equal length legs of the triangle still created a tendency to lean backwards, it was much more limited than the initial design without the safety pin.

**But what about the backpack?**

My initial concept was to use the straps that ran the length of the shelf underneath as shoulder straps, which would be used when someone would remove the shelf from the frame, wrap up the books, and wear the shelf during the move. This action was still a requirement, but I needed to test it out to see which strategy would work best.

The first attempt at backpack wearing happened with an empty shelf. Since I hadn’t designed the mechanism for wrapping and securing the books, it would have been more distracting than helpful to include them. After removing the shelf from the frame, I began to play with the straps, attempting to slide them into place to more easily wear. Doing so, I ran into two problems:

> Since the support triangles were on the inside, it took a good deal of finicky adjustments to move the excess nylon to the
backpack strap area.

While this was irritating, I first brushed it off, thinking that it could be solved with better hardware. However, I knew from an earlier observation that I wanted the support triangles on the outside so that they didn’t crowd the collection. Moving the support triangles to the outside would require special hardware (that I didn’t have at my disposal) to serve as both suspension hooks and backpack straps.

The straps currently had no easy way of being adjusted for different sized wearers and different sized loads.

Since I knew how to solve for this first (and had the available hardware and materials), I decided to address this issue first.

Adjustable backpack straps generically have 2 different styles. I’ve nicknamed them the “open loop” vs. the “closed loop”. The open loop is more common, requiring the wearer to simply pull on the open straps to tighten the fit. The simplicity of this style was appealing to me, but I wanted to avoid the visual clutter of straps hanging from the shelves.

The second style, the “closed loop” is what is more commonly used on one-strap messenger bags and dog collars. They are typically more difficult to adjust, but are cleaner in appearance, without any extra straps hanging down. I decided to try and mock up the “closed loop” first, since I expected the backpack straps to be used infrequently.
Another issue I planned to address in the last mockup was the tilt. Although I moved the suspension triangles to the outside of the shelf as part of the backpack trial, the books still had the tendency to tilt the shelf towards the wall. The static lengths of the triangle sides did a great deal preventing the shelf from turning over completely, but it still had more lean than I was comfortable with. I played around a bit with the latest modification, realizing that if I pinched the far length of the triangle, things straightened out.


Adjusting the length of the suspension triangles proved to the trick. With a quick pinch of the far side length, the entire shelf straightened out, even with a full load of books pushed to the far side.

At this point, I recreated a second iteration of the mockup based on a number of my design decisions. The intent was to increase the resolution of the design, focusing on the functional aspects that I didn’t get right in the first iteration.
Again, using scrap material and nylon webbing, I put together another version. While this second iteration wasn’t perfect, I was able to further refine the more complicated “backpack” requirement.

To begin, I sketched out what I planned as the ‘workflow’ for the how the backpack would be used—
Conceptual workflow for the backpack in action.

1. Wrap my books so they're safe.
   - Secure them inside.
   - Throw in some other pieces?

2. Take the package of the frame

3. Turn it upright, like a hiking bag

4. Put it on a chair or table so its closer to back height

5. Adjust Straps

6. Put on bag like backpack

7. Adjust straps as necessary
Then, I worked out some more detailed design drawings that planned out how the second iteration would be built.
Based on these new sketches, I mocked up the second iteration of the book sled.

The second iteration (right) compared to the first.

The length adjustments are included as part of the sled’s hanging mechanism, as opposed to the drops from the crossbar in the first iteration.
Detail of the hanging mechanism from the outside base.
USER TESTING

Before making any additional design decisions, I decided to have a friend try out the backpack to help direct any further changes.

Step 1  Preparing for transport

Step 2  Making the backpack
Addy assembles the backpack with little guidance.
Guiding Addy through the different interactions and uses of the design was incredibly helpful. I was able to see what was awkward, uncomfortable, and even clever.

It was clear that the backpack interaction wasn’t well resolved through these explorations. While I still assert that it’s a useful idea in theory, I was unable to implement it successfully enough to include it in the final prototype.

Another discovery was in regard to hanging the shelves on the hooks. This process was thought of as an unveiling; placing the book sleds in the perfect viewing area. Watching Addy, I saw that the implementation of hooks created a challenge. Hanging the shelf on the cross bar was difficult, due to the weight of the books, and the allowances I designed for a swinging movement. In a perfect world this interaction would be resolved with the support of a mechanical engineer, but in the absence of that, my solution wasn’t bad.

At this point I felt confident enough to draft a final prototype of the design that would not only align with my initial intents, but was refined based on the detailed process of mocking up a physical prototype.
FINAL PROTOTYPE

Leaning again on Jake Levek for his woodworking skills, I commissioned him to build both the frame and all 3 book sleds based on my refinements. After some discussion, we decided to use ash for all the components. Although neither of us did any calculations to test the load, we both felt confident that ash was hard, yet flexible enough to hold the varying weight of a small book collection.

To replace the nylon webbing used in my first prototype, I decided to use leather straps due to their strength and how the material breaks-in over time. The light color of ash-wood would be weighted down too much with a dark color, so I left the leather straps tanned, but a natural color. While thinking through the aesthetics of this decision, I also used reference material. I wanted the design to feel appropriately contemporary (for my near-future young adults), yet decidedly non-digital as the emphasis of the design was on physical book-objects.

Overall, the final prototype looks much like my initial rendering and has a

30 https://s-media-cache-ak0.pinimg.com/736x/41/a3/a0/41a3a0335c0df732e7e4ebf-01c36f817.jpg, Aintree by Tomás Alonso at Vera, Chapter One
Reducing the dimensions of the supports was visually appealing, but likely too aggressive for a structure intended to support upwards of 100lbs day in and out. While I was able to arrange a well balanced shelf for photographing the prototype, it did not feel sturdy enough in its’ current state to serve its intended function. However, the correct solution doesn’t feel too far off. The initial prototype was 160% thicker and very solid, leaving me to assume that with support from a mechanical engineer the exact numbers could be pinned down rather easily.
My leatherwork turned out as noticeably rudimentary as my skill-set, but it still does the job. The book supports (shelves) are solidly held up by the adjustable leather straps. The hooks are all functional and, for the most part, balance the books at the proper angle without too much fuss. Unfortunately, the raw vegetan look didn’t stick around for long, and by the time I finished creating the riveted hangers was a darker sandy brown. I had hoped for the leather to visually blend with the ash wood, creating a quiet, monochromatic that would enhance the presence of the book collection.
Detail of how cross bar fits into leaning base.

Entire shelf collapsed, preparing for transportation.
Transporting the leaning base. Both sticks easily fit over one shoulder.

Preparing for transport.
Removing books for the demo, as stability wasn’t immediately found in the prototype.

Showing how the final unit can be carried as a litter for transportation.
Conclusion

I began this process wondering what to do with my ‘pile of books’. Years and many move later, I can assert that my initial hunches were right: there still isn’t a good standard for how to move a book collection. I say this with 6 fully packed boxes sitting in my garage; they’re “out of sight, out of mind” and I don’t even remember what’s in there.

The Book Swing, as a piece of furniture, is only partially functional. It would need many more design iterations (and probably the assistance of a mechanical engineer) to truly work out all the kinks. The backpack element has been removed from the final prototype, but I still assert that it is an idea worth exploring. I hope to come across a similar design solution in the future; riffing on a “back pack” as more than a daily caryall has potential.

Looking beyond the physical outcome of the process, reflecting on the effect of continued digital adoption, the design problem itself is constantly validated both at home and in public. Book collections both at home and at work risk losing relevancy and quickly become disposable; dated technical volumes are more often used as bookends.

These smaller collections have begun to align even more closely to my theory of ‘pride books’. There is seemingly more attention paid to the edition, cover art, and quality of the book-object than its’ presence. More often than not, I hear about people reading books in a digital format and only purchasing a physical copy if they ‘really liked it’. The digital divide has become a screening process, per se.

Though I no longer fall into the same cohort as my initial user group, I still see friends and acquaintances relocate regularly. Scarcity of jobs has forced many to move to unexpected places, rarely with any monetary support for relocation. Cars get packed up and pizza gets ordered. Moving books in heavy boxes is still a pain.
While a number of design collections have popped up, attempting to address the transient experiences of young adulthood, I have yet to see a commercially available object that helps move a book collection. This is not to say that moving a book collection is a pressing cultural concern, or even a commercially viable one, just one that is perhaps hard to solve.

The coming decades will most certainly present new challenges, but it has yet to be seen whether or not that means the end of casual book collections. Despite our immersion in social media and digital places, we still lean on physical signifiers to express our identities in a public forum. Fashion and even the choice of digital devices are used to project and communicate to others. It’s my guess that small collections of ‘pride books’ will still be with us for quite some time.

Appendix

Thesis proposal, data collection, surveys

1. Thesis Proposal

For The Love Of Books

*a modular bookcase for growth and display*

Even before we are able to read, books become fetish objects. They are carried around, and re-read tirelessly. As we age and acquisitions grow in numbers, the evolving collection of books reflects our interests, development, and dreams. Moving through life, books are rarely forgotten all together. In fact, they have a tendency to follow us around, sometimes living stretches of time in cardboard boxes or milk crates before they reach their next home.

For people to whom books hold a great deal of significance, their storage, display, and transportation is a challenge. Especially through the dramatic growth years of adolescence and young adulthood. Though the focus is on the book-objects themselves, they are almost inseparable from the functional surface which allows them to be seen and used. This project concerns the issues that arise in early book ownership and collecting.

As information increasingly moves to a digital format, individuals will strive for a more concrete reflection of themselves. Even with electronic reading options on the rise, books will continue to act as carriers of personal significance for their owners. Gaining more importance is likely to be boutique books, reflecting specific personal interests, as everyday reference material is more easily found in a digital format. The book as personal expression is a concept as old as the printing press, however it’s relevancy has increased in recent times with the variety and accessibility of published material.
Though this project addresses a generation steeped in digital culture, it is based on the belief that the tangible, and physical book format is a distinct experience not readily replaced. Books also play a social role, as they are shared and traded between individuals, establishing a connection. The social life of books is often private, though can even be public an anonymous through such organizations as BookCrossing. These expressions further support the importance of the physical book as an object to be owned, swapped, and stored. Books can bring us together in ways that digital text cannot.

### Key Questions

**Physical Function**

How can books be stored and displayed in a temporary living situation?

How can a book collection be easily moved to a new dwelling with minimal effort?

How can shelving serve a secondary purpose as needs change and evolve?

**Emotional Function**

How can shelving feature aspects of a collection, while obscuring others?
2. Research Participants

<table>
<thead>
<tr>
<th>Name</th>
<th>Age</th>
<th>Undergraduate</th>
<th>Graduate</th>
<th>Moving frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anastasia</td>
<td>25</td>
<td>completed</td>
<td>preparing for LSATs exam</td>
<td>5 times in 5 years</td>
</tr>
<tr>
<td>Jeff</td>
<td>26</td>
<td>completed</td>
<td>completed</td>
<td>4 times in 5 years</td>
</tr>
<tr>
<td>Erika</td>
<td>27</td>
<td>completed</td>
<td>in-progress</td>
<td>6 times in 5 years</td>
</tr>
<tr>
<td>Katherine</td>
<td>26</td>
<td>completed</td>
<td>in-progress</td>
<td>4 times in 5 years</td>
</tr>
<tr>
<td>Sylvan</td>
<td>28</td>
<td>completed</td>
<td>in-progress</td>
<td>6 times in 5 years</td>
</tr>
<tr>
<td>Rachel</td>
<td>27</td>
<td>completed</td>
<td>in-progress</td>
<td>7 times in 5 years</td>
</tr>
</tbody>
</table>

3. Semi-structured interview questions

*These questions were used conversationally, and rarely in a word-for-word format. The implicit questions are listed to show what my underlying motivation was during the interview. Many of the implicit questions were answered by my observations.*

1. Would you give me a tour of your book collection?
   - <implicit questions>

2. About how many books do they own?
   - 1–50
   - 50–100
   - 100–200
   - 200+

3. What are the divisions between the sections?
   - Public vs. private
   - Categorical

4. Where do the significantly meaningful books/objects go?
   - On the shelf
   - in a special case
5. How are books stored/displayed?
   - Shelves
   - Boxes
   - Stacks
   - Other

6. Do you have any other books that aren’t on display?
   - <implicit questions>

7. Where are the other books?
   - ‘Private’ places?
   - In storage (onsite)
   - In storage (off site)
   - On loan?

8. Do you have any digital copies of books?
   - <implicit questions>

9. What kind of books are digitized?
   - School-related (ie. textbooks)
   - Reading for pleasure
   - Library books
   - Books with significant meaning

10. When was the last time you moved?

11. How did you move?
    - Hired movers
    - Did it myself
    - Asked friends to help

12. How did you move your book collection?
    - Boxes/crates/containers
13. How do you feel about moving?
   - Describe how you pack
   - Describe how you unpack
   - What do you unpack first?

14. Have you ever not unpacked something after a move?
   - What was it?
   - Is it still packed up?
   - How do you feel about it?

4. Facebook’s Original Profile

![Facebook’s Original Profile](http://www.marine-bigio.com/blog/wp-content/uploads/2013/10/facebook-2.jpg)


5. Digital Media Explorations
1. The recordable book

- Recordable note cards
Bibliography


Review of Literature

The Meaning of Things: Domestic Symbols and the Self
A study closely examining the significance of personal domestic objects, performed in the 1980's in the Chicago area.

Used primarily as support to my hypothesis that people form relationships with their possessions, even if it’s nonsensical.

Design Impact: In reference to both the books we buy/own/display and their importance to us personally, as well as their expression outwardly about who we are. In addition - attempting to design an object that can be meaningful, or connected to things already with meaning in some way.

Emotionally Durable Design
A close look at why people decide to discard their belongings, examining the different types of emotional attachments people have with objects.

Design Impact: An improved understanding about materials, longevity, forming relationships over time shaped my strategy and biased my design towards creating an object that would be long-lasting and emotionally significant.

An Introduction to Design and Culture: 1900 to the Present.
An overview of design history from it's origins in craft and early industrialism, through the 1990's.

Most significant impact is in reference to industrial design rooted in conspicuous consumption—more generally the idea that we buy things to emphasize/display/voice our opinion about ourselves. The core concept carries over to modern behaviors.
Design Impact: Support for basic concept that even though we might have more easy access to digital content, it's still important to display a physical version of ourselves.

**The Book on the Bookshelf**

A history of the codex (book) format and its evolution from scrolls to illuminated manuscripts. The author outlines how the storage of the book was in response to its original form, with adaptations along the way.

Design Impact: Makes the case for the standard bookshelf based on the physical codex format. The bookcase and box forms, however, are solidly established in a less transient time, never meant for moving (other than barrister's cases). This was concrete inspiration for moving away from the case format to something more flexible, especially for smaller collections.