Utility in Organization
Utility in Organization

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With love, I dedicate this book to my family.

I thank Mitzi Vernon, Clive Vorster, Ellen Braaten, and Robert Reuter for their constructive critique, thoughtful guidance, and advocacy.

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Abstract
Why are some objects kept longer than others?

Iterative thoughts on materials, connection, and texture led to my first inclinations as to why one object outlasted another. After some consideration, these thoughts revealed trends in a particular product group, not necessarily reasons for a product’s long life cycle. Although materials, connection and texture are important aspects to the user and consequently to a product’s life cycle, they are not the main reasons for its longevity. For example, Jane may keep a green cushioned chair with a chrome plated steel base longer than her wood stool because of its sentimental value, not necessarily because of its materials, connections, or texture. A designer cannot give products sentimental value; however, a designer can make decisions regarding a product’s utility or durability.
**Five Tenets**

I investigated products with a long life cycle hoping to find trends. I found long lasting products tend to be **USEFUL**, **HONEST**, and **DURABLE**. I also found that I am more likely to keep a product if it expresses a sense of **WIT** and if its value extends beyond its price tag (**ECONOMY**).

1. **Utility**
   - The quality or condition of being useful

2. **Honest**
   - Truthful; not false; Sincere; frank

3. **Durability**
   - Capable of withstanding wear

4. **Wit**
   - Cleverly amusing

5. **Economy**
   - Careful management of resources

**Thesis Basis**

Of the five tenets I decided utility is the primary reason a product is kept longer than others. With the goal of designing a long lasting product, utility became my primary design objective. HONESTY, DURABILITY, WIT, and ECONOMY became secondary design objectives.
How can the utility of organization influence one’s work spHERE?

Organization & Work spHERE

An object’s utility is dependent upon its accessibility or organization within a context. Curious as to how systems of organization are derived, I investigated the workplace and more specifically, one’s work spHERE.

Ethnographic Research

I conducted a series of interviews with professors, students, and administrative assistants in their work spHERES to gain a greater understanding of how they organize their space. I found that most people organize the same items. However, they do so in a highly personalized manner. I believe this is because tasks and work styles vary from person to person.

Gestural Drawing

The essence of how utility of organization influences one’s work spHERE is captured in this gesture drawing of a customizable storage wall.

Storage Wall WALLrus WALL*mart WALLball WALLnut dryWALL WALLus WALLam! WALLy WALLpaper
Research
I researched effectiveness in the workplace and how people organize their workplace in order to maximize the storage's utility.

Modular
A modular storage unit of bins and frames was developed for and based upon commonly stored items.

Connection
A custom extrusion was designed to connect bins, frames, and accessories together.

Storage
A storage system within the bins was designed to accommodate shelves and drawers.
C-system

It Checks Out

The C-system is a modular system composed of back-racks, frames, bins, C-shapes, and box frames that can be customized to accommodate the storage needs of multiple users.
ABSTRACT

Work Space Divider

Height
I Work in Books
I made process books for each thesis review to facilitate constructive critique. I used the books to gain perspective on past decisions and to reassess the project’s direction.
Tenets in Design

Reasons

Book I

Book II

Book III

Book IV

Book V

Book VI

Book VII

Model Drawings I

Model Drawings II

Thesis Book
Narrative
Thesis Formulation: Tenets in Design
Why are some objects kept longer than others?
Iterative thoughts on materials, connection, and texture led to my first inclinations as to why one object outlasted another. After some consideration, these thoughts revealed trends in a particular product group, not necessarily reasons for a product’s long life cycle. Although materials, connection and texture are important aspects to the user and consequently to a product’s life cycle, they are not the main reasons for its longevity. For example, Jane may keep a green cushioned chair with a chrome plated steel base longer than her wood stool because of its sentimental value, not necessarily because of its materials, connections, or texture. A designer cannot give the products sentimental value; however, a designer can make decisions regarding a product’s utility or durability.

Design Values
The idea that a designer can give a product a set of design characteristics or values intrigued me. For example, DeWalt connotes durability in their power drills by coloring the encasement yellow, a color predominant in reliable equipment e.g., earth moving machinery (CAT). Designers instill values in a product just as a painter infuses emotion into a painting.

Brand Identity
A designer or design team can establish a reputation with design values. Consumers relate to these values and endorse them with their purchases which consequently supports the design or design team that instilled these values. This is understood as brand identity.

Marketing
If a set of values from a designer or design team can be instilled in a product, then the summation of these values give a product character. If products have values and characteristics, then why are our products not our friends? I believe that they can be. Products may be the manifestation of our desires in particular situations! For example, if I value compassion after a stressful day, I may choose to purchase a cushy couch to comfort me after a long day at work. Populations can be characterized and links can be made between materials and people to better suit a person with a product.

Recap
I have found that designers and design teams can instill values in products to create a brand identity, and that identity is consequently marketed to a target audience.
Five Tenets
I investigated products with a long life cycle and found them to be USEFUL, HONEST, and DURABLE. In addition, I added two more tenets that would increase the life cycle for me, WIT and ECONOMY.

1 Utility: the quality or condition of being useful
The product's function is necessary, but at times it is not the main objective. Sometimes image, novelty, or style take precedent over utility in product design e.g., a compass wrist watch. When utility is not the driving factor in design, the product's life cycle diminishes greatly. In cases where the object's utility is the primary concern, utility becomes the aesthetic - as seen in cooking utensils and garden tools. Utensils and tools make utility the primary design goal, resulting in longer lasting products. An object that performs a task is an object more likely to be kept.

2 Honest: truthful; not false; sincere; frank
A teen grows a mustache before enough facial hair has developed to fill in strong. It looks awkward and quite 'ugly.' The same guy is learning which clothes he wants to represent himself in - Nikes, plaid shirts, jeans, GAP clothing etc. Not having his mind made up, he picks a bit of each, resulting in a montage of styles. He looks what some would call 'ugly' IF he is judged on his sense of "style." However, if ugliness refers to the false expression of one's self, then he is NOT ugly; he is quite honest. Hopefully in a couple of years he will have chosen a wardrobe that honestly reflects who he is and what he represents. If his clothes do not reflect who he is... then he is ugly.

Design is similar. An idea emerges, we give it mass, features, additives, gizmos... whamo it is an ugly mess - literally. Refinement questions the mess until a solution is derived from iteration and decision making.

3 Durability: capable of withstanding wear
A durable object can be used repeatedly and withstand abuse as well as neglect, e.g., camping equipment. A dependable object is more likely to be kept. After all, how valuable would a tent be if it was occasionally water proof?

4 Wit: cleverly amusing
I enjoy products that are cleverly amusing. They look as if they have a life of their own or a sense of spirit. A witty product does not answer to the minimum requirements, nor do they apply unnecessary gadgets or features to enhance their style. Witty products find a clever way to express a condition within the product. This clever expression gives the user a bit of amusement - almost a sense of pride in owning something so thoughtfully put together.

5 Economy: careful management of resources
I think it is important that a well designed product is affordable. In recent times, Eames and IKEA have been leaders in delivering well designed products at an affordable price through thoughtful material choices and processing techniques. Design should be affordable.

Summary
Utility in an object can be enhanced by a honest and durable design. Other than sentimental value, I have determined that utility is the prime reason why one object is kept longer than another. Wit and economy are design values that also encourage me to keep a product longer.
Thesis Formulation: Design Research

Inspiration and Precedent
Companies, persons, and objects that influenced my thesis development. pg 48.

Ethnographic Research
How do people utilize and organize their workspHEREs? pg 50.

Utility and Organization
What do utility and organization have in common? pg 44.

Thesis Question
pg 46.

Product Options
What product within the workspHERE will the thesis question address? pg 58.

Research
Articles regarding storage, organization, and workplac e effectiveness. pg 54.
Utility and Organization
They Go Hand-in-Hand.
The utility of an object is dependent upon its usability and organization within a context. For example, a fire extinguisher is useful because it is easy to use and is accessible. Objects are organized by the demands placed upon them e.g., frequency of use, ease of access, or convenience. Curious as to how the organization of multiple objects interact in the same context, I chose to investigate the work spHERE.
1xUtility
1xOrganization
+ 1xWork spHERE

Thesis Question:

How can the utility of organization influence one’s work spHERE?
Inspiration

Achille Castiglioni provides examples of clever connections (Parentesi lamp), witty design solutions (Allunaggio seat), and innovative uses for industrial objects (Mezzadro seat and Sella).

Utensils. Farming and cooking utensils exhibit a sense of honesty in their construction and function. Their utility is their aesthetic.

Chuck Close exemplifies how modular units can build a larger body of work (Fanny/Fingerpainting, 1985 and Elizabeth, 1989), as a shelving unit is the summation of framed spaces.

Precedent

IKEA delivers well designed products. Their furniture has proven that thoughtfully designed furniture can be affordable, available, and applicable to users’ lifestyles.

USM cleverly uses two staple materials (sheet metal and tubular steel) with a third component to create a modular storage system.

“Shaker design is so purposeful in concept and so economical in execution...”
- Robert Daniell
Ethnographic Research

It’s my spHERE.
And you do with it what you want to: typing, writing, listening, learning, and much more.

STACKS: “CURRENT PROJECTS”
Typically 4-6 projects occurring at a time; line the circumference of the work area

RESOURCES
Reference material, typically in the form of books, models, and journals

COMPUTER AND PERIPHERALS
Monitor, CPU, mouse, keyboard, printer, scanner...

PERSONAL TOUCH
Items that soften the feel of the office

FILES: ARCHIVED AND CURRENT
Current files are kept a roughly 12-18” away, while archived files are kept more than a 18”

Ethnographic Research
It’s in my Drawers.
Drawers have meaning - they sort things into categories to be found when needed. In general, there are file, personal, and utensil drawers. The drawers are organized based upon frequency of use. Typically, the closest drawer to the desktop is the utensil drawer second to the personal drawer, while the file drawer is the furthest away.

Utensils
Pencils, pens, calculators, labels, paper clips, envelopes, tape... are kept 3-8” from the hand. Typically, they are divided into two to three compartments. One compartment holds smaller objects such as paper clips and pens. The larger divisions hold items such as scissors and paper.

Personal
Tums, bills, band-aids, keys, disks, candy, letters... are kept 8-12” from the hand. One to two divisions are common. The drawer is traditionally divided into two areas: one for papers (bills and letters) and one for mixed items (band-aids and snacks).

Files
Working and archival files are kept within 12-18” of the hand. The frequency at which the file sets are used determine their proximity to the center of the work spHERE.
INTRODUCTION
The following is a collection of articles, surveys, and statistics I accumulated regarding office communication, storage needs, and organizational thoughts.

COMMUNICATION
Innovation and effectiveness in the workplace is directly related to the communication between individuals and their frequency of interactions.

“Frequent contacts with many colleagues seemed more beneficial than frequent contact with just a few colleagues. Similarly, having many colleagues both inside and outside of one’s own group seemed better than having many colleagues in one place and just a few in the other. So anything you can do to promote these forms of contact should be in the right direction” (Allen pg 123).

More specifically, the likelihood of communication is exponentially related to the distance between those in dialog. In fact, the probability of a weekly conversation of two individuals is only likely within the first thirty feet or conversational distance (Smith 442).

Consequently, office planners consider communication channels to promote innovation and effectiveness. “They (office designers) build in ‘functional inefficiencies’; they put kitchens and copiers and printers and libraries in places that can be reached only by a circuitous journey” (Gladwell, 12/11/00, pg 67). Furthermore, the most valuable persons within the company should not be in remote corner office, but rather in the middle interacting with office communications. Allen created the following flow chart to illustrate the complexities of office communication.

PAPER
When considering the U.S.’s consumption of paper, a paperless office is not likely to exist anytime soon. The most common paper, uncoated free-sheet paper, has increased 15% in the U.S. between 1995 and 2000 (Gladwell, 4/25/00, pg 92). Furthermore, socialists Abigail Sellen and Richard Harper wrote in their book The Myth of the Paperless Office:

“It is only if paper’s usefulness is in the information written directly on it that it must be stored. If its usefulness lies in the promotion of ongoing creative thinking, then, once that thinking is finished, the paper becomes superfluous. The solution to our paper problem is not to use less paper but to keep less paper. Why bother filing at all? Everything we know about the workplace suggests that few if any knowledge workers ever refer to documents again once they have filed them away, which should come as no surprise, since paper is a lousy way to archive information…. Besides, we all have the best filing system ever invented, right there on our desks - the personal computer…. In fretting over paper, we have been tripped up by a historical accident of innovation, confused by the assumption that the most important invention is always the most recent. Had the computer come first - and paper second - no one would raise an eyebrow at the (paper)” (Gladwell, 4/25/00, pg 96).

Steelcase conducted a series of surveys to quantify how people used their office and how they would want to use it. Please note the variety of items stored within the desk, and the need to store paper. The storage accommodates for all the mentioned items in its bins, drawers, and shelves.

Note that the majority of those surveyed would like to work at home in a completely adjustable, customizable, and personalized space.

ORGANIZATION via CUSTOMIZATION
It was determined that the best system of organization is one that is personally derived, e.g., the desk drawer with dividers. Drawer dividers enable the user to organize the drawer according to their needs and are flexible enough to accommodate multiple items, e.g., staples or a checkbook. The adjustable dividers encourage a personal style of organization.

ORGANIZE:
“Each day, American office workers spend an average of 20.1 minutes organizing their work areas. According the Steelcase study, most people ages 18 to 54 spend between six and 30 minutes organizing and straightening their work area each day, while people 55 and above spend 15 minutes or under” (Steelcase Inc., Are you a filer or piler?).

ADJUSTABLE:
“It all comes down to what people value…. Years ago the status of a corner office was the ultimate achievement. Today, it appears that many people value control over their space, flexibility and comfort more than status” (Steelcase Inc., Demise the corner office?).

CUSTOMIZABLE:
“Whether it’s as dramatic as a life-size Gumby or as simple as photographs and custom calendars, people want to have ownership over their space and feel good about where they spend the majority of their time” (Steelcase Inc., Personalizing the office).

CONCLUSION:
The storage system is intended to encourage communication through its transparency, accommodate for storage needs; and adjust to deliver a customized system of organization.
Product Options

Ideation
Exploration of factors that influence one’s work sphere.

Product Options

Desks
A utilitarian desk that can be customized by users to suit their organizational needs.
Product Options
Electronics
A) Cubicle screen that displays natural environments inside the office such as a live feed from an aquarium. B) A paper scanner shredder. Once the paper is electronically stored it is discarded via the shredder. C) Electronic desktop designed for multitasking.

Product Options
Customized Storage
Because organization is highly dependent upon the user, why not have users build their own offices? The storage units are based upon commonly stored objects, while the unit’s arrangement is set by the user.
Gesture Drawing
The gesture drawing to the left captures the essence of the project. A modular storage unit emphasizes the utility of organization because it can be customized to suit the user’s needs.
Thesis: Module

Finding the Proportions
What are the proportions of the bins and frames? pg 68.

Master'n the Module
What base module will accommodate storage? pg 66.

System
What options does the system yield? pg 78.
Master’n the Module
MOD MAN
Seven is the module of the "\"/\".
14 for Binders.
28 for Desks
42 for Counters
70 for "\"/\"
The module gives the proportions and dimensions validity.

Standing Counter Height of 40" to 45"
42" 40" 42.5"

Table Height of 28" to 32"
28" 32" 34"

Binder Height of 12"
14" 16" 17"

Compact Disc Height of 5.5"
7" 8" 8.5"
Finding the Proportions
Mr. Man Puts it into Context.
Gesture drawings to show the desk, counter, and \heights in context.

Finding the Proportions
Number of Bins and Frames.
A system of bins and frames was developed to give the gesture drawing structure. The bins are held by an outer frame. The number of bins and frames was determined by first translating the gesture drawing into a computer model. Then the number of bins and frames was iterated until their diversity was maximized and their quantity minimized.

Computer Model of the Gesture Drawing
Finding the Proportions

Fifth Time Is the Trick.
The proportions are based on the module of seven. Multiples of seven accommodate for desk, counter, and wall heights as well as 4 frame sizes that relate to the size of mug (7”), book (14”), and large format storage (21”).

Finding the Proportions
Do I Look Thick?
The thinner option was chosen (left) in order to conserve material. The frame is twice as thick as the bins because the frame provides structural support. See page 84 for further information.
Finding the Proportions
Sorry I Taped Over It.
Full scale plot to tests bin to bin and bin to frame.

Finding the Proportions
MDF III
This MDF model investigates the \(\triangle\)'s proportions in three dimensions.
Finding the Proportions
Physical Model Library
1. Chipboard I
2. MDF I
3. MDF II
4. Chipboard II
5. MDF III
System
Sea of Options
A modular system enables seemingly limitless configurations with a finite number of components.
Thesis: Structure

Rack’n Out
What will prevent the bins and frames from racking?
pg 91.

Conjunction Function
How will the components connect?
pg 84.

Fool’n It
How will the \ interact with the floor?
pg 96.
Conjunction Function

I'll Take T-Bolts Please.
A C-channel and t-bolt system will connect the bins and frames together.

Conjunction Function

Exacting the Extrusion.
The C-channel is formalized into an extrusion. The extrusion dimensions are based upon forces imposed by bins.
Conjunction Function
My Inner and Outer Connection.
What connection system makes sense for the different scales of connection in and outside the bin?

(1) T-Bolts
Connecting everything with a t-bolt is an over engineered solution for smaller connections, e.g., shelves.

(2) T-Bolts and Screws
T-bolts can connect bins to bins and frames to bins. Screws can connect all other items within the bins. However, two forms of connection within the bin is not needed.

(3) Screws
Screws are versatile enough to accommodate for large and small scale connections. However, screwing the \| together interrupts the surfaces with holes and poses hole alignment problems.
Frames Will Be Frames.
The width of the frame's extrusion should be based upon the forces imposed on it. Neither a full frame width (upper left) nor an asymmetrical (upper right) extrusion correlates to the forces imposed upon the frame. Because bins can extend from either side of the frame, the extrusion should be symmetrical.

Almag Aluminum, who specializes in aluminum extrusion, was contacted to check the validity of the extrusion. They consider the frame extrusion to be a "text book example."
Conjunction Function

Bin Extrusion

Almag Aluminum also critiqued bin extrusion. They recommended a thicker cross section and additional support across the C-channel (suggestions shown below).

Rack’n Out

MDF I Learnings.

The frames require additional support to prevent racking. The bins may not need as much reinforcement as the frames.
Rack’n Out
Yes, But No Thanks.
Gussets can prevent rack’n. However, they do not reflect the nature of the gesture drawing. No thanks to the gussets.

Rack’n Out
Embracing the Frames.
Bins and frames can be braced along the rim, at the corner, or internally (see iterations below). None of the external options were chosen because they did not support the gesture drawing. An internal option was chosen because it supports the gesture drawing, increases extrusion’s utility, and is a durable connection.
It's wHolistic.
The connection system addresses structure, inter connectivity, and the modular aesthetic.
Foot’n It
10° Tilt Test
The \[ W \land \| \] must have a base of 26" to withstand a 10° tilt.

\[
\text{frame width} = 8'' \\
\text{base} = 2\times\text{foot} + \text{frame width} \\
\text{base/2} = \text{foot} + 4''
\]

\[
\tan 80° = \frac{74''}{\text{base/2}} \\
\tan 80° = \frac{74''}{(\text{foot} + 4'')}
\]

\[
\text{foot} = 9.05'' \\
\text{base} = 26.1''
\]

Foot’n It
C or Square?
The square foot was chosen for its efficient use of material.
Thesis: Storage

Small Problem
How will shelves be constructed? pg 100.

Tubed
Why can't tubes connect it all? pg 106.

Screwed
Why can't screws connect it all? pg 110.

C-ystem
See how the system works. pg 114.

Big Solution
Shelves... How will the system work? pg 104.
**Smaller Problem**

shELVES, Yes. Connection?
Explorations of how shELVES could connect to the bins.

---

After some iteration, it was found that a connection system was needed instead of a singular solution for a shELF connection.
It’s the Cat’s Meow.
The “back racks” shown are used to prevent bin-push-throughs. This element signified a point in which the project addressed a storage system within the bins. The smallest things can make the biggest difference.
Bigger Solution
Options for supporting drawers and shELVES.

Bottomed Out: NO
Drawer hardware can connect/to rest on the bottom of the bins. This system won’t work because it doesn’t accommodate for shELVES.

Framed: NO
An internal frame will support shELVES and drawers. This system won’t be used because the frame duplicates the structure of the bins.

Tubed: Possible
Tubes act as shELVES and support drawers. See Tubed section to see if it will work, pg 104.

Screwed: Possible
Screws will connect drawer hardware and shELVES to bins along edge or inner surfaces. See Screwed section to see if it can work, pg 34.
Tubed
Tubes for All.
The tubes are easily arranged and reinforce the storage-within-storage aesthetic.

Exploded view of tubes. A tube could act as a shELF or become a casing for a drawer.
Tubed

Construction Drawings
The tolerances of the tubes within the bins will work.

Tubed

Render Tells All.
The render illustrates the tube’s redundant nature. The tubes work great as shELVES but are an inefficient use of material when used in conjunction with a drawer. The tubes are nixed.
Screwed
C-Worthy
Can the shELF be a part of the drawer? No, the hardware of the drawer interrupts the shELF.

Screwed
Dado Drawer
The base of the drawer doubles as a shELF and a drawer bottom. The drawer hardware is set in the drawer by a dado cut. Yes, this works, but can the dado cut be eliminated?
Screwed
Exploring the Versatility.
The dado cuts are eliminated by reapplying the shELF.

Screwed
C’Il Do it.
The shELF versatility minimizes the number of components needed. shELVES can be upgraded to project boxes with the addition of drawer walls. Project boxes can be upgraded to drawers with drawer hardware. Project boxes can be removed from the /\ for remote use.
C-system
It Checks Out
An exploded view of the C-system shows how it works.
C-system

The Magnitude of the Module

The module enables seemingly limitless options from a finite number of components.
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