

DESIGN FOR DIGNITY

by

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ABSTRACT

After evaluating the eldercare product environment through use of observation and empathy exercises, I identify a trend of neglect towards aesthetic and its role in the formation of identity on the part of the product and the user. By analyzing cases where medical designs defy this trend, I determine what design strategies were used. Through the process of redesign and application of relevant design strategies, I then explore how eldercare products might better serve a broader range of human needs. Finally, I address the role of the industrial designer in the cultivation of change and accountability.

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List of Accompanying Materials

1. Bathroom Bench
2. Incontinence bag style guide - PDF
3. Incontinence bag style guide - print

Introduction

When it comes to products we use every day, it isn't hard to find options that are aesthetically pleasing, designed to match a particular curated taste. Many of the objects we surround ourselves with have the auxiliary function of reflecting our personality. In this way, our product environments can act as an extension of our sense of self, or as a reflection of our idealized self. This is true of the cars we drive, the laptops we purchase, and the furniture we display in our homes.

I've observed that this is not the case in the market of elder care products. Many of these products, like walkers, bedside commodes, and wheelchairs, are often designed to solve only one side of a multi faceted problem in a cheaply producible way.

The aesthetics of these products are rarely refined past a direct reflection of the manufacturing method. Because of this, they often have the visual language of temporary medical products. I'd argue that eldercare products, too, act as an extension of our sense of self, and that the use of materials or aesthetics which conjure negative associations can be detrimental to one's self esteem, and sense of dignity. I've personally observed how one's sense of pride can drive people to avoid using an undignified object, even when the use of that object is crucial to their physical health. For example, when it first became necessary for my grandfather to use a mobility walker, he preferred to use a cane in each hand as a substitute. His canes were always something he was able to personalize. One he had was hand carved and painted to look like his dog. Another was made of beautiful, glossy wood with polished metal inserts. In his eyes, his canes were fashionable, respectable objects – the walker was not. Unfortunately, the canes do not provide the structural support that he needs, and there

were multiple occasions where he lost his balance and nearly fell. Observing this taught me that ignorance of aesthetic in the design of these objects can be dangerous, or even life threatening.

My thesis research aims not only to identify flaws in the current eldercare market, but to develop an understanding of why they are there. Next, informed by existing successful work in the eldercare marketplace, I'll consult with existing design theory and apply it to the redesign of both a physical product and a brand. I hope that through my research, and implementation of an empathetic design process, I will become more equipped to help solve problems I do not personally experience.

Material culture and identity

In order to unpack and appreciate the dysfunction which plagues the eldercare product environment, we must first build a foundation of theory on the psychology of material identity. A generally accepted tenet both in sociology and psychology proposes that our identities have a close relationship with material culture and the built environment. In the article “Material Objects, Identity and the Home,” social scientists Keith Jacobs and Jeff Malpas recount that until very recently, the meaning and values placed the built environment, the home, and material culture were seen as nothing more than products of the consumerist society in which they exist. “From this perspective, objects in the home are viewed in terms of what they tell us about social status and aspiration.”¹ (282) Jacobs and Malpas argue that more recently, sociologists and psychologists have begun to view both our identities and our homes as an amalgamation of the material objects we collect.²

Another foundational theory I’d like to call attention to has to do with the ways in which we construe meaning from material qualities. According to anthropological studies, we associate objects’ aesthetic and material qualities with human attributes, to the extent that “the objects themselves are often themselves viewed almost as human – so much so that they may even be viewed as having biographies of their own.”³ In turn, we associate those human attributes with the objects’ human owners. Sociologist Rachel Hurdley argues that the manner in which people display objects in their home and the

¹ Jacobs, Keith ; Malpas, Jeff *Material Objects, Identity and the Home: Towards a Relational Housing Research Agenda* Housing, Theory and Society, 09/2013, Vol.30(3), pp.281-292 [Peer Reviewed Journal]

² Ibid

³ Hoskins, J. 2006. “Agency, Biography and Objects.” In *Handbook of Material Culture*, edited by C. Tilley. London: Sage.

way they describe their feelings towards these objects are integral to the making of identity. As she writes “by narrating stories about and around the objects they display in their homes, individuals can account for identities that otherwise might not be immediately present or presentable”⁴ (Hurdley 2006, 729). The most overt examples of this are seen in the objects we most consciously display, such as our clothing, our vehicles, and our electronic devices. These objects are designed with an audience in mind that is not limited to the owner of the object. For this reason, ‘display’ objects like these are often imbued with hyper identities, polarized in one direction or another.

While we are more attuned to mechanics of identity as they apply to commonly displayed objects, these mechanics are at work regardless of whether the subject is consciously displaying the object or not. They also apply regardless of the publicity of the object. That is to say, it doesn’t matter if someone thinks of their car or their clothing as part of their identity; these objects still contribute to the identity perceived by those around them. Moreover, it doesn’t matter if an object is kept in private and never displayed; the subject’s perception of that object still plays a role in the formation of their identity.

Now, consider what happens when the objects someone is forced to display most prominently are imbued with a perceived negative, damaging identity. This is the case with the vast majority of elder care products. These objects, while designed to improve mobility and promote health, are often associated with a loss of independence and abilities that comes with age. It doesn’t matter what the designer’s intention is. The only thing that matters is the way in which it is perceived. Anthropologist Nicolas

⁴ Hurdley, R. (2006) *Dismantling Mantelpieces: Narrating Identities and Materializing Culture in the Home*. Sociology, 2006, Vol.40(4), Cardiff: University of Wales, Cardiff.

Thomas notes that the disparity between what an object was meant to be and how it is perceived is most prominently seen in ‘the category to which a thing belongs, the emotion and judgment it prompts, and narrative it recalls’⁵. Mobility aids and walkers provide a good example of this. For those who need them, walkers become an extension of themselves, used every day to allow them to overcome daily tasks that become more difficult with age. Despite the fact that the explicit function of a walker is to improve one’s mobility, we commonly associate them with impairment, weakness, and dependency. The conflict between these two associations creates a kind of dysphoria in the mind of the user.

This dysphoria is the reason why buying eldercare products can be an emotionally difficult experience. To make matters worse, the drive to keep costs low and a general neglect towards aesthetics in the industry has led to a market of products that look like temporary accommodations for problems that likely will last the rest of the person’s life. Would this not make you feel like you, are a temporary problem, not worth a more elegant solution?

⁵ Thomas, N. (1991). *Entangled Objects: Exchange, Material Culture, and Colonialism in the Pacific*. Cambridge: Harvard University Press.

Examples in Product design

While the majority of eldercare products fail in the ways I've previously outlined, there are a few diamonds in the rough. In the following section, I will highlight a few medical and mobility products that I believe are successful in serving a broader range of human needs. Some criteria I require to identify a product as successful in this case include:

- 1: The product addresses problems that are neither immediately obvious to an outsider nor typically addressed by products of its type.
- 2: The designer pays attention to the aesthetic of the object, and employs one that is both appropriate to the object and the user.
- 3: Neither the aesthetic of the object nor the materials are commonly associated with negative attributes (e.g. medical, dependency, temporary)
- 3: Both the object and accompanying instructional materials are made easy to understand to the end user.

ClearRX by Deborah Adler



Figure 1: ClearRX medicine bottle with colored rings.⁶

⁶ <http://www.adlerdesign.com/project/clear-rx-medication-system/>

One exceptional example of universal design is Deborah Adler's ClearRX medicine bottle designed for Target in 2005. Adler was said to have designed the bottle as a student after her grandmother took her grandfather's medicine by mistake. "Her name was Helen. His was Herman. Same initial – H Adler – and the pill bottles looked alike."⁷

The Clear RX bottle was characterized by its clear, legible labels which made use of large, bold type and hierarchical formatting. The bottle's flat faces allowed the user to view all the standard information at once, while allowing for extra room on the back for extra notes. Slots in the side of the bottle allow it to come with a note card for further instructions, and an optional transparent card which acted like a magnifying glass. Interchangeable color rings around the neck of the bottle allowed users to personalize their bottles, enabling at a glance identification of who the medication belonged to. The bottle's cap was designed to be hard for a child to open, but easy for an adult. 10 years later, Target sold its pharmacy business to CVS, and much to the public's dismay, they stopped supplying the pill bottle, and some consumers were reported to have fished their old ones out of the trash.

⁷ <http://www.adlerdesign.com/project/clear-rx-medication-system/>

Woobi Play by Kilo



Figure 2: A young girl sports Woobi Play with orange and green caps.

Woobi Play is a simple, beautiful anti-pollution mask which filters dangerous airborne particles out of the air that children breath using a micro high-efficiency particulate arrestance (HEPA) filter.

“The mask is designed to meet children at eye-level, with a playful, educational approach, and is a bold shot at designing a simple, new typology that transforms a professional mask to fit into a child’s universe.

The mask, suitable for kids from 6 years of age, comes disassembled with an educational manual. Woobi’s modular system encourages kids and parents to put the parts together, piece by piece, to build the finished product. The interaction helps them to understand the product’s functionality and introduces a dialogue on pollution and protection. The different coloured parts act as a simplifying tool for communication around the product’s functionality and allow kids to customize the mask

the way they like it, giving them a sense of ownership and autonomy over their own safety.”⁸

Woobi Play goes above and beyond in ensuring that its users not only enjoy the product, but understand why it’s important that they use it. The same principles Kilo has employed here would apply perfectly to any medical product.

Thomy by Renata Souza



Figure 3: Thomy in its friendly case with helpful temporary tattoos.

⁸ <http://kilodesign.dk/work/woobi/>

The Thomy insulin injector is a fantastic example of appropriate design. This injector and its case were designed by Renata Souza Luque to facilitate the administration of insulin for young children with type 1 diabetes.

“The set uses temporary tattoos to help children remember where they have previously injected the insulin, avoiding complications at the injection site. It also uses an insulin pen designed specifically for a child's hand. Both products are intuitive and playful, adding a bit of fun and whimsy to the process of managing a difficult condition.”⁹

-Renata Souza Luque

By incorporating elements of fun into the daily procedure of insulin administration, and designing the entire experience the way one might design a toy, Renata Souza Luque made Thomy something children could look forward to using.

⁹ <http://www.renatasouzaluque.com/thomy/>

No Country For Old Men collection by Lanzavecchia + Wai



Figure 4: Walking canes with integrated trays and baskets.



Figure 5: Lamp with magnifying screen.

The No Country For Old Men by Lanzavecchia + Wai is a collection of domestic objects designed to make daily tasks easier for the elderly. The T, U and I canes offer a handle to grab to provide balance when walking around the house, as well as room in their colorful bins and trays to transport a pair of teacups, knitting supplies, or whatever else one might want. The Lamp with magnifying screen sits steady on a table at any orientation, magnifying and illuminating your book, or whatever you place in front of it. What's wonderful about this collection is that the objects were designed appropriately for the environment they inhabit. Tasteful materials were chosen for their visual warmth, and inviting tactile qualities which feel the most at home – well – in the home.

Reflection

After examining each of these medical and mobility products closely, one can begin to infer what makes them successful beyond my initial criteria. The thing it seems the designers of these products all have in common is that they all employ an empathetic design strategy which is considerate of users' needs and feelings towards the built environment. Picking the right design strategy is especially important when designing for a user group different than one's own. A well considered, structured design strategy can make it easier to avoid common pitfalls often associated with one's biases. Two well documented design strategies, which I will cover in the next section, are universal design and human-centered design.

Design Thinking: Universal design

Universal design, also known as Inclusive design, is a strategy in which you reduce the impact of disability through the creation of a barrier free built environment. This design strategy was popularized in the fields of interior and architectural design following the enactment of the Americans with Disabilities Act, which was originally signed into law in 1990. The ADA prohibited discrimination against people with disabilities in employment, transportation, public accommodation, communications, and governmental activities. The enactment of the ADA meant an incredibly detailed list of rules and regulations had to be drafted, and precise definitions of properly accessible design had to be agreed upon. For the first time, discriminatory design was nationally recognized as negligent, intolerable behavior. Unfortunately, there was no response in the field of industrial design. It is recorded that during the signing of the ADA, there were 48.9 million disabled in the US. In 2007, 15% of Americans who are not institutionalized and 5 years or older were disabled.¹⁰ (In this study, eyesight, hearing, on the job concerns, impoverishment, veteran status/etc are included, while temporary disabilities, such as asthma or arthritis, were not.) The following is a list of some key terms as defined by the ADA.

Disability (ADATA 20010c)¹¹

1. A physical or mental impairment that substantially limits one or more major life activities of such individual.
2. A record of such impairment.
3. Being regarded as having such impairment.

¹⁰Nussbaumer, Linda L. *Inclusive Design : A Universal Need*
New York : Fairchild ; London : Bloomsbury distributor; 2012

¹¹ Ibid

Physical impairment: physiological disorder, cosmetic disfigurement, or anatomical loss affecting one or more body systems such as speech, hearing, and speech impairments, as well as mobility or dexterity loss. This may include medical conditions such as cancer or diabetes.¹²

Major life activities: walking, talking, seeing hearing, breathing, caring for oneself, and so on. Also includes manual tasks, eating, standing, lifting, reading, body functions such as those of the immune system, normal cell growth, digestive, neurological, circulatory and more.¹³

Exclusions: use of drugs, sexual and behavioral disorders, compulsive gambling, kleptomania, and more.¹⁴

By properly applying universal design, eldercare products can be made to make the experience of aging more comfortable and less emotionally distressing.

Design Thinking: Human centered design

Human centered design is an approach in design encompassing strategies and methods for research, with the goal of better understanding the problems of a group of people with which the designer may share little in common. One common characteristic of this method is the participation of the end user in all stages of the design process. As the design is developed, the designer frequently consults with the people it is designed for, building a better understanding of the user's' life experience. Sometimes designers will shadow a person while they interact with existing products. Later on, the designer might present early concepts and ask for feedback from the users. The end goal of this

¹² Ibid

¹³ Ibid

¹⁴ Ibid

process is to ensure the product one designs effectively solves real problems, instead of imagined ones built on assumption and bias. This approach has been championed by design firms and communities like OXO, IDEO and Design for America, who each have written their own design strategy handbooks to help solve socially focused problems.

By applying a human centered approach, designers of eldercare products might more fully understand the needs and desires of their user group, and be more equipped to make products that are both effective and well liked.

Brand: an analysis of the marketing and retail environment

As a designer, it isn't enough to solely research the prices, features, and popularity of competitor products. One must also develop an understanding the marketplace in which the product lives, taking note of the motives and methods used by those marketing and selling the product. To paint a more complete picture of the eldercare product environment, I decided to visit a few of the medical supply stores local to Eugene. Medical supply stores carry mobility products like walkers, among other eldercare products, including incontinence bags, post-surgery therapy products, bed side commodes, grab bars and shower furniture. During my visits to local medical supply stores, I made note of what products they carried, as well as how they were displayed and what strategies were used to market them.

The first medical supply store I visited was King Medical Supply¹⁵. King's showroom was quite tightly packed. Its narrow aisles were stocked with bandages and mobility aids. Facing the windows on one of the walls were their walkers, transfer benches, and bathroom furniture, displayed on raised carpeted platforms. Of all the walkers there, only one was inexpensive enough to be covered by the \$60 afforded every 5 years by insurance. Its bare aluminum frame, exposed brake lines and low padded seat left much to be desired. Unfortunately, even the most expensive alternatives have very little to offer. One I looked at had the added amenities of a thicker padded seat, a basket beneath, and a few extra colorways. Regardless of what color it was coated in, the cold aluminum frame still had the aesthetic of a medical crutch. Exposed fasteners, industrial joints, and brake lines strewn across the object made it look like a temporary solution to a permanent problem.

Product brochures were also available, sitting on top of the various mobility aids and bathroom furniture. One enticed readers with warranties promising the replacement of a broken frame. However, warranties for smaller, more delicate components expire in only a year. Another brochure, entitled '365 bathroom' leveraged fear of injury by highlighting the different bathroom 'hot spots' where the risk of injury is elevated, and presented specialized products design to remedy each one. The same brochure tries to downplay the costs of these remedies by telling the reader that they could make their bathroom safe for less than a dollar a day.

¹⁵ <http://kingostomy.com/>



Figure 6: a bedside commode with brochure displayed on tan carpeted pedestal

Next, I visited Norco Medical Supply¹⁶. Here, products were grouped by brand in a large, uncluttered, open space. Much like at King, many of the mobility aids were displayed on raised pedestals near display windows. In the center of the space, a round waist height counter surrounded a few cubicles, manned by sales people hard at work over the phone. Some specialty products, like Bedcane, a bedside grab bar, warranted their own display, complete with instructional posters marketing the product. To the side of the cubicles, 15 copies of the 'Drive' walker were lined up together, displayed in

¹⁶ <https://www.norco-inc.com/>

a way that reminded me of a car dealership. According to representatives at both King and Norco, their basic walker was the best selling product. I was told this was because their basic walker was the only mobility product covered by insurance. At King, an estimated 50% of customers pay solely through insurance, and at Norco, 80% do. Perhaps, at Norco, the drive walker was displayed in great numbers with a variety of colors to instill the feeling that customers were still making a choice even when insurance left them with a single option.



Figure 7: 15 Drive walkers displayed at Norco Medical Supply. The Drive walker was the only model covered by insurance.



Figure 8: The Bedcane product display is an example of marketing through positive association.

The tan and grey carpeted floors and the empty beige walls made the retail environment at both these medical supply stores feel corporate, cold, and lifeless. The employees, on the other hand, were kind, and very aware of how emotionally difficult it can be for customers whose visits often coincide with recovery from surgeries, or general losses of independence.

I felt that the entire customer experience might be made less severe if the store's environment felt more friendly, familiar, and refined. This could be achieved by incorporating nice materials, wood paneling, and/or natural light. Additionally, by separating phone center and retail floor, customers might feel more like they have the full attention of the staff.

Case study: incontinence bags

With some elder care products, the material quality, and aesthetic of an object are more rigid due to tight constraints such as cost. This is true of daily use disposable objects, such as incontinence bags and adult diapers. In order to do a thorough analysis of the incontinence bag as a product, I purchased 3 bags, each from a different brand: a Conveen Contoured leg bag, a Bard Dispoz-A-Bag disposable urinary leg bag, and a Medline fabric leg bag.

Incontinence bags are plastic bags which store urine and feces of someone who has limited control of their bladder/colon. Some versions are worn on the person, typically attached to the leg with webbing. Other, bedside incontinence bags keep you from having accidents while asleep. All three of these bags came in a disposable paper and plastic peel-open package. The contents of each package included an instructional pamphlet, the incontinence bag, and a strap of webbing one could use to button the bag to their leg.

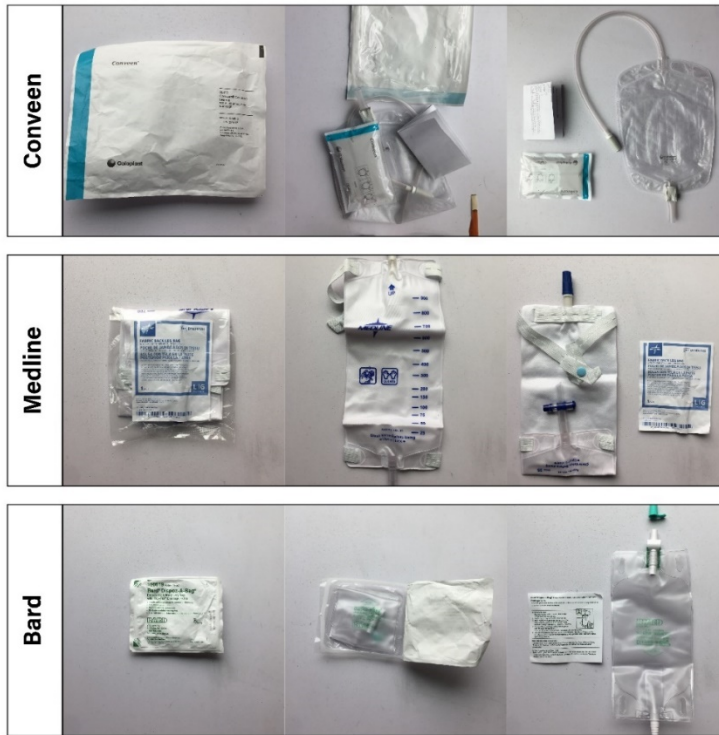


Figure 9: packaging of 3 brands of incontinence bags

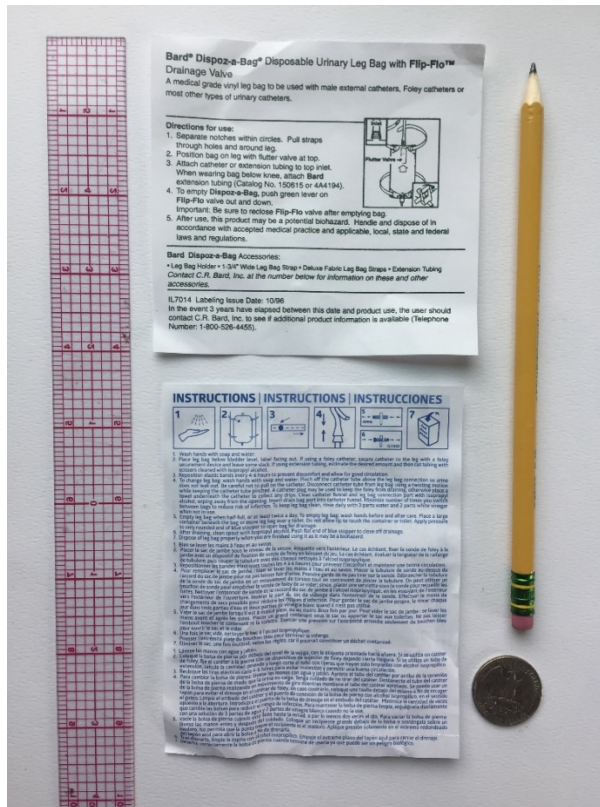


Figure 10: Instructional pamphlets from Medline and Bard brand incontinence bags.

Empathy Exercise

In order to evaluate the functionality of an incontinence bag, I wore the Conveen Contoured leg bag for an entire day as an empathy exercise. My goal with this exercise was to get a sense of what someone who uses the product goes through on a daily basis, on both a practical and an emotional level.

The first challenge I ran into was figuring out how to apply the bag. The text and illustrations on the instructional pamphlet were not only extremely small, they were also so vague and difficult to follow that I applied the bag incorrectly the first time. Only after getting frustrated with the bag falling down the leg of my pants towards my ankle did I realize that I'd applied the webbing to the wrong part of the bag. I imagined that following these instructions would be even more challenging for someone with a vision impairment.

The other thing I initially noticed was how much trust is placed in the pinch release seal at the bottom of the bag, used to shut a valve used to release the contents of the bag into the toilet. The hinged plastic valve, which requires some level of fine motor control to open, does not sit flush with itself when closed, as if to suggest that it was not closed all the way. I felt the valve might be improved by incorporating a snap fit, in order to provide some auditory feedback to let the user know that it's closed, as well as to ensure that the hinge does not open if accidentally caught on something. The instructional pamphlet also provides an opportunity to offer some reassurance, letting them know that the valve will not easily open on its own.

The entire day, I felt the pressure of the bag on my leg. Whenever I'd use the restroom, I'd fill it an appropriate amount with warm water. Another point of friction I

noticed was that occasionally, when I sat down, the tube running between the catheter and the bag would sit against my knee and I'd see the profile of the tube running up my leg through the fabric of my pants. This experience conjured images of a cyborg composure underneath, something inhuman. Another negative experience I recorded was having the bag gradually slide down my leg, to the point where the bottom of the bag peeked out of the cuff of my pant leg. The most negative thoughts I had that day were about what the bag represented. I could see how it might feel like a constant reminder of dependence.

One thing I was confused about during my empathy exercise was the procedure for the disposal of the bag. While instructions were clear in stating that the bag should not be flushed down the toilet, they did not offer an example of an appropriate receptacle. I found that use cases such as disposal, drainage of a full bag, and application of a new bag could be more clearly illustrated in the manuals of all three incontinence bags I purchased.

At the end of the day, besides the release valve, the only other physical qualities I felt I'd change about the object were the color of the webbing (from a grey medical beige to a warmer flesh tone) and the opacity of the bag itself, which was transparent.

Brand redesign

In cases like I previously mentioned, where the material quality, and aesthetic of an object are more rigid due to tight constraints, the branding of the product can be used to elevate, or humanize the experience for the user. In avoiding complex medical jargon, using legible typeface, and utilizing visual styling, brochures and instructional

pamphlets might better communicate their contents as well as promote a healthier relationship with medical products.

After evaluating three kinds of incontinence bags, I found it necessary to create a sample style guide applicable to the packaging and instructional pamphlets for incontinence products to elevate the user experience, and improve the communication of health and safety information.

Informed by my uncertainty regarding proper procedures for bag changing, I devoted the first part of my style guide to incorporating critical information into the brand of the product. By branding the bag as a “1 day bag”, the products’ packaging and instructions can dissuade users from using it more than once without relying on scare tactics and copious amounts of medical jargon. The second part of my style guide, “Baselines”, demonstrates an appropriate baseline grid for printed text. By giving blocks of text room to breathe, legibility and visual clarity are improved. The third part of my brand style guide, “Hierarchy Of Type” provides guidelines which detail which fonts in which weights to use for different applications to ensure legibility for users with vision impairment. While this style guide is brief, it contains restrictions that would drastically improve the effectiveness of printed pamphlets and brochures.

Case study: Bathroom transfer bench

In my visits to medical supply stores, one family of products that struck me as particularly poorly designed was the assistive bathroom furniture. Cheap materials were made to look even more pathetic by the designers’ complete and utter disregard for the products’ aesthetic. Really no attempt was made to make the products look inviting, or

friendly; seat tops looked more concerned with being easily sanitized than being comfortable to sit on. Plastic seats with strange textures and mediocre forms looked more appropriate to a hospital setting than a bathroom. Exposed adjuster mechanisms on the legs of the chairs and benches were reminiscent of camping furniture, visually communicating that the objects were easy to take apart and put away. However, none of the objects could be assembled or disassembled without tools.



Figure 11: a collection of bathroom furniture.



Figure 12: a shower seat with a particularly ungainly texture, reminiscent of bacteria, applied in a somewhat arbitrary manner.



Figure 13: This brownish grey bathroom bench's texture may match the carpet it was displayed on, but is neither appropriate for the bathroom nor does it look comfortable or inviting.



Figure 14: Pairs of drainage holes were so thoughtlessly scattered on this bathroom bench that the product was bewildering to look at.

Product redesign: bathroom bench

In order to apply my research on material identity, the eldercare product environment and design theory, I took on the challenge of redesigning the bathroom transfer bench to be comfortable, affordable, easy to use, and visually appropriate for the domestic bathroom.

In order to apply my research on material identity, the eldercare product environment and design theory, I took on the challenge of redesigning the bathroom transfer bench. One of my top priorities was to keep the cost of the product low. Unlike walkers, bathroom mobility products typically are not covered by insurance. This means cost constraints do not completely define the product market, and luxury versions are more viable. But while a transfer bench made with luxury materials and a complex form would easily solve the problem of negative associations, such a product would be too expensive for most people to afford. By designing an affordable baseline product using accessible materials, I could demonstrate that appropriate, successful design solutions are attainable for both luxury and low-end markets.

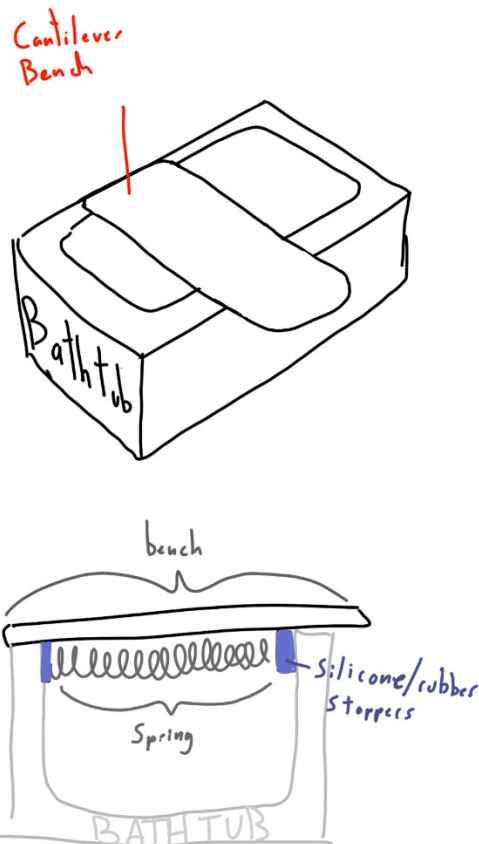
After imposing a cost constraint, choosing appropriate materials proved to be an easy task. For the main body of the bench, I decided to use injection molded plastic, as it is cheap, structurally strong, waterproof, and available in many colors. For comfort, I incorporated a cushion, made from closed cell waterproof foam covered in the same fabric used in outdoor furniture. This combination of materials allows the bench to function in the bathroom while maintaining the potential for personalization.

Then next step was choosing an aesthetic, and designing the form. Early on I decided that I wanted my object to be visually quiet. By this I mean I didn't want any

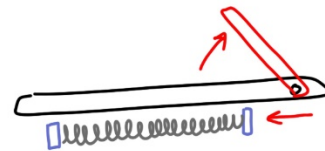
one element of the form to call attention to itself, or draw any associative meanings. In order to achieve this, the mechanism for attaching the bath to the object is hidden below, allowing the user to focus on the most inviting elements: the waterproof cushioned seat top and the large pull handle used to release the bench from the bathtub.

The next challenge was figuring out an effective mechanism for securing the bench to the tub. This proved extremely difficult; the bench's cantilevered front end meant that this mechanism needed to be extremely robust to keep the back of the bench from catapulting upwards when used. After consulting mechanical engineering forums, I decided that a spread clamp was the most appropriate mechanism, as it would allow the bench to be attached securely in a compact way. By using a spread clamp, rather than collapsible legs, the bench maintains portability without conforming to the problematic temporary aesthetic I identified in the current product marketplace.

For the physical prototype, I built the main body of the bench out of solid wood and plywood. While these materials are not representative of the intended manufacturing method or surface finish, they are readily available, structurally sound, and allow construction of relatively complex forms using regular woodshop tools. For the cushion, outdoor fabric, a waterproof zipper, and 0.5" closed cell foam were used. The mechanism was mocked up using standard drawer slides, plywood, springs and a 3d printed enclosure.



I am designing a transfer bench for the elderly+wheelchair bound to get in the bathtub. I am looking for a mechanism that will allow the user to secure/remove the seat to the bathtub without much physical effort.



Desired effect: lightly lift lever to engage and disengage the spring, which acts as a spread clamp to secure the bench to a bathtub.

Figure 15: A diagram used to communicate an early ‘spread clamp’ mechanism concept on a mechanical engineering forum.

My final design is an elegant transfer bench with a humble aesthetic. In accordance with universal design, no visual or functional element signifies eldercare or disability; the object would look natural in anyone’s home, regardless of age. In order to empower users and foster a sense of independence, the bench is easily removed, and light enough to be lifted and set aside when not in use. To fit with consumers’ personal style, both the color of the plastic body, and the type of seat fabric used are customizable.



Figure 16: the bathroom bench rendered in 4 potential color schemes

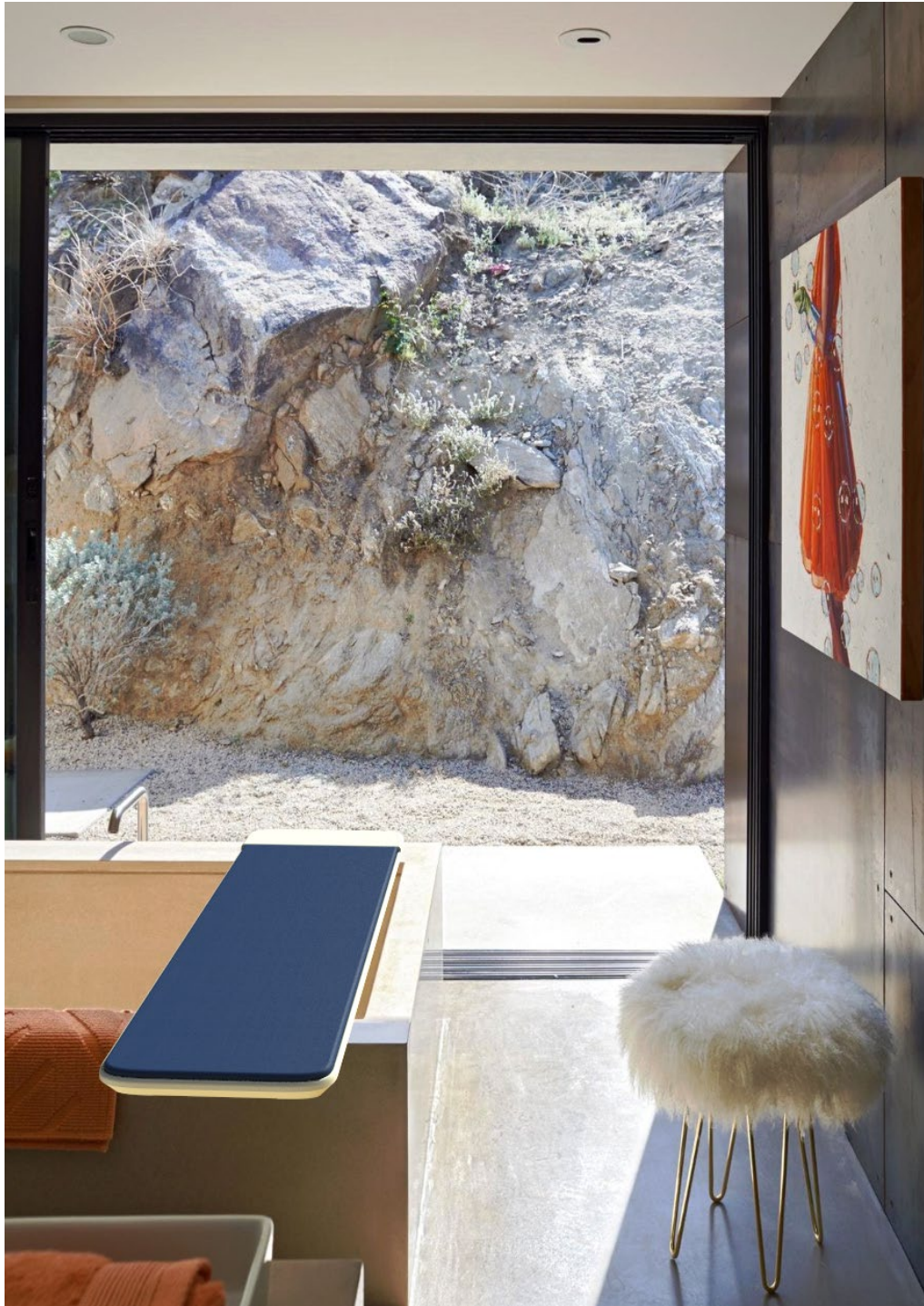


Figure 17: context rendering of the bathroom bench in a domestic environment.



Figure 18: second context rendering of the bathroom bench in a domestic environment.



Figure

19: Third context rendering of the bathroom bench in a domestic environment.

The one caveat my product has is that in hiding the mechanisms for attaching the bench to the bath, and slimming the bench down to a size small enough to be easily lifted and set aside by someone without much physical strength, I have made some sacrifices in the bench's functionality. For one, the bench is not viable for low bathtubs. Getting in and out of a seated position below a typical chair height is known to be not only difficult, but dangerous for the elderly, doubly so if the individual is recovering from surgery. However, even with an appropriate bathtub height, I would recommend installing grab-bars on the bathroom walls to accompany the product, ensuring balance and stability when entering and exiting the tub.



Figure 20: bench prototype in a domestic bathroom.



Figure 21: The solid back end of the bench provides a convenient place to store shampoo or body wash.



Figure 22: A shot of myself sitting on the bench.



Figure 23: a drawer style handle is pulled to release the bench from the bathtub.

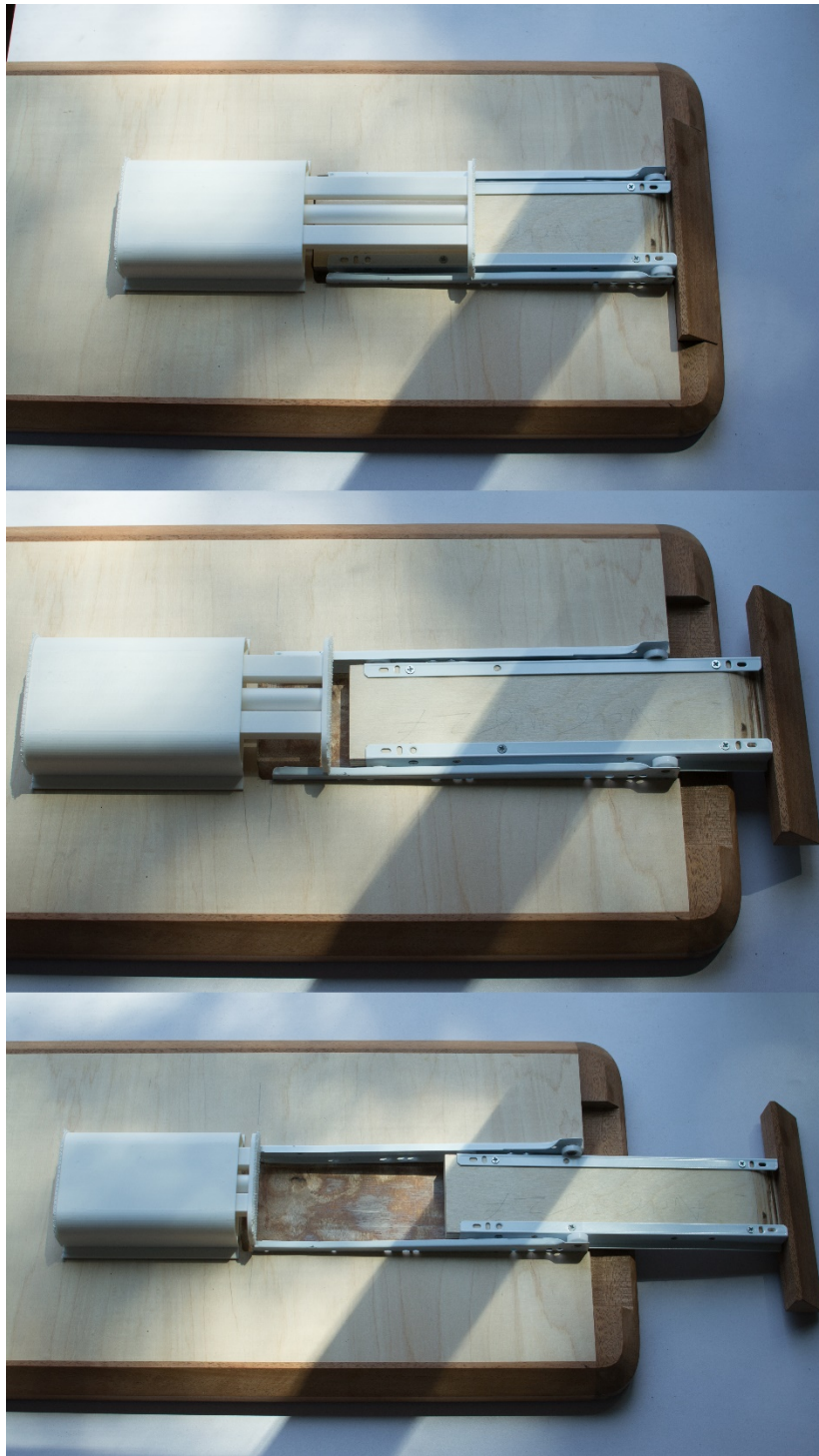


Figure 24: For the prototype, the spread clamp mechanism is mocked up with drawer slides, and a 3d printed spring enclosure. While these components are not durable enough to withstand actual application, they are good tools to both visually communicate how the mechanism might operate, and physically demonstrate how the interface might feel to use.

Conclusion

Through the study and evaluation of the eldercare product market, I've become increasingly aware of how important it is that we recognize the emotional impact of our design. It's critical that we acknowledge and consider users' needs, no matter how different they may be from our own. Industrial designers do not have the luxury of having explicit written, enforced guidelines to follow, the way architects have with the ADA. There is no law to hold us accountable for negligent designs. For this reason, we must be extra diligent to ensure our designs do not marginalize, exclude, or fail those with different abilities than our own.

I believe that by implementing universal design, and making products useful to multiple user groups when applicable, designers can increase both the lifespan and the appeal of objects typically regarded as temporary medical solutions. By applying principles of empathetic design not just to the product but to the branding and retail environment, we can make the experience of aging a little bit less daunting, and a little more human.

When I first started working on this project, my goal was to build experience in socially responsible design. I aimed not only to design an object that deserves to exist, but to shed light on the places where well intentioned designers have failed, and the human needs their designs have neglected. Through the process of redesigning the transfer bench and building the incontinence style guide, I've created work that acts as an example of how we might rectify these failures, and undo this neglect.

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