

Externalizing Normativity in Design Reviews: Inscribing Design Values in Designed Artifacts

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***Abstract:** The design community has discussed issues of ethics and values for decades, but less attention has been paid to the question of how an ethical sensibility might be developed or taken on by design students. In this analysis, we explore how normative concerns emerge through the process of design reviews—where a developing designer’s normative infrastructure is engaged with the artifact they are designing. We focused on the normative concerns that were foregrounded by two undergraduate and two graduate industrial design students across a series of five design reviews, addressing the possible relationship between the emergence of normative concerns and the inscription of norms in the final designed artifact. We used several critical qualitative techniques, including sequence analysis and meaning reconstruction to locate areas where normative concerns were addressed.*

Normative concerns only arose in explicit form in the earliest review sessions on the graduate level, if they were going to arise at all, and end-user research appeared to be the primary mechanism for introducing norms into the design process. Neither instructor actively engaged or foregrounded the normative infrastructure of the design students, and all of the normative concerns discussed in the four cases were brought to the conversation by students. Implications for including awareness of normative concerns as part of a student’s developing design character are considered as part of a systemic approach to ethics and values in design education.

Keywords: critical theory, normativity, ethics, design character, design education

1. Introduction

The ethics of designs and designing have been foregrounded in recent years, as concerns about sustainability, designing for the developing world, and changing modes of production have emerged. Early in the 20th century, as design was paired with the industrial model of production, the topic of social change was widely discussed in the art and design communities. While this discussion often focused on the social change rather than the underlying ethical or normative concerns, there was a general awareness of the impact a design *could* have on the fabric of society through human interaction. Issues relating to social change were a core part of the first systematic efforts to structure design education, first at the Bauhaus, and later at the offshoots of the Bauhaus in the United States (Findeli, 1990). But this attention to social change, particularly in the ethical commitment of designing, has largely not been followed through in modern design education.

While the normative dimension of production has been discussed in more philosophical terms for decades, which can be read in relation to design (e.g., Borgmann, 2010; Verbeek, 2006), less attention has been paid to the development of an ethical sensibility on the part of the developing designer—part of what Nelson and Stolterman (2012) refer to as one’s *design character*. But the broader issues of normativity and the implications of this perspective in design have been raised for decades, under a number of different guises.

Papanek’s text *Design for the Real World: Human Ecology and Social Change* (1972) represented a substantial shift in product design when it is viewed in historical context. The promise of industrial production of products, particularly in the post-war era, had led to a market increasingly driven by consumption rather than need, and designers had shifted from creating product niches and developing consumer appetite for products to unwittingly shaping much larger social ecologies. In the decades since, sentiments have turned against the “market,” even as the graduates of design programs took their place within the market-driven world of commercial design. This divide was framed as a struggle between market- and socially-driven approaches, as with McCoy (1990): “[w]e must educate our new designers for this larger ethical view if design is to be more than the servant of commercialism” (p. 22).

The critical perspective we employ here highlights the importance of *normative concerns*, which are validity claims expressed within every communicative act about what *should* or *ought to be*. The discussion of normative concerns has frequently been directed back at the structures of design education, which have generally been straightforward calls for attention to ethics (McCoy, 1990; Newton, 2004), “responsible design” (Findeli, 2001), or simply a design outcome that does not result in failure (Petroski, 1992). And the solutions offered in these texts are often equally vague, as with Findeli (2001) advocating for moral education: “As to the question of individualistic ethics, the matter is almost too simple: some kind of moral education must be included in the design curriculum, so that the moral consciousness of every student is increased” (p. 14).

There have also been attempts to focus on the broader social change agenda, as with Margolin and Margolin (2002), who envision design beyond the “market,” building on the work of Papanek (1972) in addressing the ecological issues surrounding designed “products” and how designers must interact with this ecology in order to effect positive social change. Klaus Krippendorf has also focused on the issue of social change as a byproduct of the “semantic shift” that has occurred in the designing of products, goods, services, and experiences. His attention to *discourses* underscores the importance of ethics and normative concerns; designing not just a product in a social vacuum, but rather a design that exists within a social system, which is even more artificial and constructed than the product that is contained within it (Krippendorf, 2005, 1995).

To move design education forward as an ethically-aware agent of social change, we must also acknowledge the ethical and normative status of the designs we produce. There are always normative claims embedded into design activity—including implicit assumptions or beliefs of the designer in regard to factors such as gender, socioeconomic status, culture—but rarely are these beliefs challenged in a systematic way as a core part of the design education endeavor. This implies a return to focus on the ways normative concerns are addressed *in situ* in the design

classroom, and how students are being encouraged to think in responsible and ethical ways in relation to their design discipline. Our analysis in this chapter serves as a counterexample, demonstrating how students' and instructors' normative concerns are overlooked or ignored.

2. Focus of Research

In this analysis of the DTRS dataset (Adams & Siddiqui, 2014), we are seeking to explore how normative concerns emerge during the review of design activity in a classroom context. Instead of looking only at the ethics embodied by the final design (*a la* Verbeek, 2006), we attempt to address the emergence and shaping of normative concerns in a more granular way—where a designer's normative commitments, a component of their design character, are engaged in all stages of design activity. In this sense, we are focusing on how an individual designer's character—externalized through communicative acts in intersubjective space—embeds or inscribes their normative assumptions into the artifact they are designing. To accomplish this, we set out two framing research questions, which informed our method of analysis:

1. How does a student's externalization of their process through a formal review or critique reveal their assumed normative concerns in relation to the end user or final designed artifact?
2. Is there a relation between the early emergence of normative concerns in the design process, as externalized in a design review with a professor, and as inscribed in the final designed artifact?

3. Theoretical Framework

We approach this analysis from the perspective of critical qualitative inquiry, drawing on the work of Jürgen Habermas (1984; 1987) as extended by Carspecken (1996). Habermas' seminal monograph—*Theory of Communicative Action* (hereafter, TCA; 1984, 1987)—provides a substantial framework with which to understand the role of normativity in all communicative acts. In particular, Habermas describes how normative validity claims—alongside subjective and objective claims—fuse and then concomitantly arise in every speech act. These three types of claims, or “formal worlds” (Habermas, 1984) each presuppose a different subject position or perspective, and thereby rely on different standards of validity based on the formal world the claim arises within. Put briefly, validity claims made within the objective formal world take on a multiple access perspective, and are resolved through standards of truth; validity claims made within the subjective formal world take on a limited access perspective, often arising as the expressive attitude of the individual, and are resolved through an adequacy of standards for criticism; finally, claims made within the normative formal world (or normative-evaluative in Habermas, 1984) take on a perspective of what should or ought to be, and are resolved by interacting with the rightness of these norms or actions. In this analysis, we primarily focus on normative validity claims, although objective and subjective claims will be implicated as well, to a lesser degree.

Normative claims are *always* being claimed in communicative acts, but our awareness of these claims—and how they relate to our position in society and the roles we take on (e.g., gender, sexual orientation, race, culture, age)—are infrequently brought to the foreground where they can be considered and challenged by alternate normative concerns. Normative concerns could potentially be addressed on a number of levels, including the development of classroom or

professional norms (e.g., Oak & Lloyd, 2014), norms relating to quality of work and common tools and methods, or the performative norms of design cognition in more general terms. In this analysis, we will focus primarily on the norms that arise in a user-centered design paradigm, when designed products are viewed in a social dimension as part of a larger societal discourse of design (Krippendorff, 2005). The analysis by Su, Tan, and Blevins (2014) is a good example of a subset of our approach, where only normative concerns relating to sustainability were considered. Our broader approach to normative concerns relates to the *use* of designed products, the agency of the *user* being designed for, and the societal implications of this use.

This understanding of communication outlined in TCA, as being infused with a normative basis of reckoning alongside the objective and subjective portions often focused on in other forms of qualitative research, allows for a greater accounting of group and community interaction, as well as implied claims of identity and selfhood. Carspecken (2003) describes the distinctives of the normative dimension as follows:

“The normative claim of today, differentiated out through grammatical and pragmatic distinctions between expressives, imperatives, propositions and the like, harks back to a claimed intersubjective identity of group life. It has roots in the emergence of the human self. *Normative claims are tied up with identity claims and existential needs.* Intrinsically motivated conversations about the grounds for normative claims cannot avoid existential issues. Why should I do such and such (aside from any utilitarian consequences)? The answer takes different forms on a developmental continuum that begins with something like, ‘Because I will be recognized as a valid self if I do,’ and moves along through progressive understandings of, ‘Because I will be able to recognize myself as valid if I do.’” (p. 1037, emphasis in original)

This baseline understanding of normative validity claims in everyday communicative acts allows us to discuss in greater detail how communication surrounding design activity might reveal such claims, particularly in how we might understand the infrastructure and ethics of design behavior. While the TCA has not historically seen substantial use in analyzing design communication, we have used elements of this approach in several recent studies, documenting the structures surrounding informal design critique (Gray 2013b), student development of design expertise (Gray 2013a), and proto-professional design behavior in informal learning spaces (Gray 2014). Greater knowledge about the validity claims underlying speech acts and their associated meaning infrastructure allow us to more fully understand pedagogical progression (i.e., how to train students to think and act in appropriate ways), while also uncovering ethical and culturally situated normative claims that are significant to the design process.

4. Method

Based on a review of transcripts, video of design review communication, and supporting design artifacts in various stages of development, we focused our attention on the longitudinal development of selected design projects across multiple design reviews in the areas of undergraduate industrial design and graduate industrial design through the lens of critical theory. We have selected two students as cases from each learning context, representing the most complete and diverse data sets across multiple review sessions.

To support our research questions, we used a framework of meaning making drawn on work from the Frankfurt school of critical theory as extended by Habermas (1984, 1987) and Carspecken (1996). This critical view—comprising a social theory of communicative action—allows us to explore how meaning is constructed, layered, and bounded in these review settings. Reconstructive analysis allows us to rigorously document and analyze meaning making, using techniques such as: meaning field analysis, validity horizon analysis, setting and sequence analysis, and power analysis (Carspecken, 1996). For this study, we will focus primarily on setting and sequence analysis, which allows us to more fully understand the interactive infrastructure in which speech acts occur, and how shifts in communication patterns over time foreground issues of heightened pedagogical concern. Interactive setting analysis focuses on the illocutionary and interaction infrastructures that allow communication between multiple participants to take place; this is an interactive co-construction of an intersubjective space (Zhang & Carspecken, 2013) that integrates understanding of communicative acts, normative and identity commitments, and the taking on of different roles by participants (Figure 1).



Figure 1. Relationship of communicative acts to underlying interactive setting structures (adapted from Gray, 2014).

Within the context of the interactive setting, our approach focuses on the normative infrastructure of the design conversation, including the interchange of meaning between design participants surrounding the design of an *ultimate particular* (Nelson & Stolterman, 2012). This includes documentation of how participants draw on objective and normative claims as externalized through an intersubjective space. The temporal location of these normatively aware validity claims will be analyzed in terms of the context of their emergence (e.g., initial design review, final client review) and the design context in which the learning takes place (e.g., undergraduate, graduate).

4.1 Analysis

Our analysis process followed an iterative path, including the following stages for each case: setting analysis, reconstruction of relevant normative claims, location of norms by participant, and comparison of norms across multiple review sessions. Each analysis stage is described in fuller detail below.

First, we performed a preliminary setting analysis to understand the overall communicative structure of each review session, allowing for identification of pivotal speech acts. This resulted in the creation of an outline-like description of the review session, including nested settings, sub-settings, and sub-sub-settings, with conversational turns as the primary unit of analysis.

Second, we reconstructed portions of the pivotal speech acts from the first stage to identify foregrounded, mid-grounded, and backgrounded normative claims, in addition to their relation to objective and subjective claims.

Third, we used a composite of these reconstructions to locate potential norms inserted into the design process by the professor and student in the review session more broadly, looking in particular at the emergence of these norms based on participant role.

Fourth, we compared these documented and reconstructed norms across multiple stages in the review process to the designed artifact and student rationale for that artifact to see if norms inserted early on in the design reviews affected the final outcome.

5. Findings

We evaluated four cases in total, drawing two cases from an undergraduate industrial design context, and an additional two cases from a graduate industrial design context, both contexts located at a large, public, United States university. Each course featured a semester-long design problem set by an outside company—a furniture manufacturer for the undergraduate context and an appliance manufacturer for the graduate context—and incentives such as prize money or internships were provided to students with the most compelling designs. The design problems were presented to the students as broad design briefs at the beginning of the academic semester, and the resulting projects were designed by the students by the end of the same semester. Each course included five review checkpoints during the semester, including research, concept development, client review, and final reviews (Table 1).

Table 1. Overview of Design Review Sessions by Context.

Context	Review 1	Review 2	Review 3	Review 4	Review 5
ID: Undergraduate	Early Concepts down to five (Desk Crit)	Select 3 concepts out of 5 (Desk Crit)	Present 3 concepts (Client Review)	Discuss full-scale mockups (Desk Crit)	Students present to client (Final Review)
ID: Graduate	Design Research (Group Crit)	Review of 3 concepts (Group Crit)	Present concepts (Client Review)	Concept reduction (Group Crit)	<i>Students present to client (Final Review)*</i>

*Slides were the only data available for this review

Following a detailed review of all four cases, the graduate cases were found to relate more directly to the focus of our analysis. To facilitate the detailed explanation of findings, we will limit our review of the two undergraduate cases to a brief summary based on the first stage of analysis, outlined above, and explore the two graduate cases in substantially greater detail, following through all four stages of analysis.

5.1 Case One: Impromptu Seating in Undergraduate Industrial Design

Students in this undergraduate industrial design course were assigned a “client-inspired” project focused on designing seating for a business context. The client was engaged in the review process at two different stages—during a formative concept review and a final summative

review—and offered the student with the best design award money and a summer internship. Seven students were included in the provided dataset, one of which was also present in the graduate dataset, but is not included in our analysis.

The assigned project was inspired by an industry partner, who participated in two of the five review sessions in varying capacities. According to the design brief, which was developed collaboratively between the professor and industry partner, the goal of the project “was to design ‘impromptu’ seating options for a real client that will provide a modern solution to collaborative work environments and be versatile in corporate and vertical market segments” (provided course syllabus). This semester-long project was supported through five design reviews, the first four of which were individual desk crits (Figure 2).

1. **First Review** (~23 minutes)
Discuss early concepts and sketches, and select 5 designs for further development in an individual meeting
2. **Second Review** (5-22 minutes)
Select 3 out of the 5 concepts to present to client in an individual meeting
3. **Client Review** (5 minutes)
Present three designs to four stakeholders [Todd had a follow-up conversation with stakeholders as well]
4. **“Look like” Review** (9-20 minutes)
Individual meetings to discuss full-scale mockups for final stakeholder presentation
5. **Final Review** (~7 minutes)
Students present final design to professor, peers, and stakeholders

Figure 2. Undergraduate Design Reviews.

The two students we analyzed approached the project brief in a similar manner, producing a competitive analysis early in the project cycle, and locating elements of existing precedent that were inspirational to their design process. While these two junior undergraduate students—Todd and Sheryl—developed very different seating concepts, the process and reduction stages were remarkably alike, with the reviews focused primarily on the material and formal qualities based on the primary generator that emerged early in the concept generation process.

Todd was captured in review sessions 1, 3, 4, and 5. He emerged in the first design review (1) as a prolific student, with good sketching and communication skills. While he presented compelling concepts, they were generally only discussed with the professor in the sanitized language of business psychology and design precedent materials produced by other business furniture manufacturers. In the client review (3), the vast majority of the discussion centered around how to arrange the segments of the furniture together, in terms of structure and connections, with virtually no indication of the sourcing of materials, the context of use, or the kinds of interactions that would be supported by this furniture. The look-like review (4) focused on practical concerns surrounding hand-skills and assembly of the product, including the limited time for this portion of the project and the fact that he would be sharing resources with other students. The final

review (5) continued the trends established in the previous reviews, with praise for his overall concept, and the entirety of the discussion focused on the technical limitations of the double angles he had designed into the final seating concept (Figure 3).

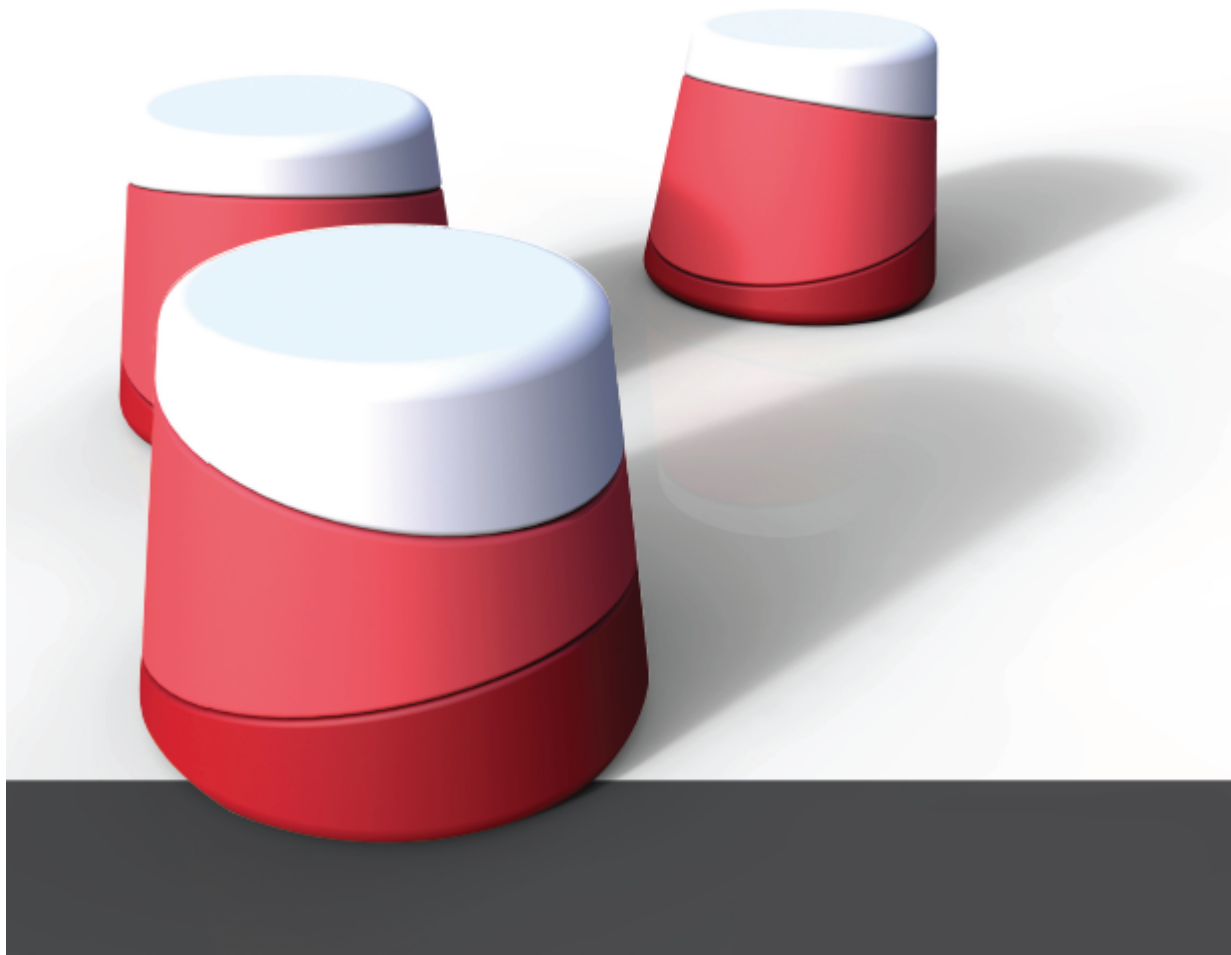


Figure 3. Todd's final concept.

Sheryl was captured in review sessions 2, 3, 4, and 5. In her second review (2), the conversation focused primarily on the selection of materials appropriate to the use and motion of the product. In the client review (3), the discussion continued to focus on material qualities such as durability and ergonomics, with virtually no mention of issues surrounding the user or the context of production and use. The look-like review (4) predictably focused almost entirely on material selection and the qualities/capabilities of those materials; some minimal discussion pointed at the need to save material or provide material efficiencies, but this was not expanded beyond the context of the specific product concept. The final review (5) continued the focus on the artifact itself, with little to no discussion of how the object would be used, beyond human factors considerations of the telescoping height of the table (Figure 4).

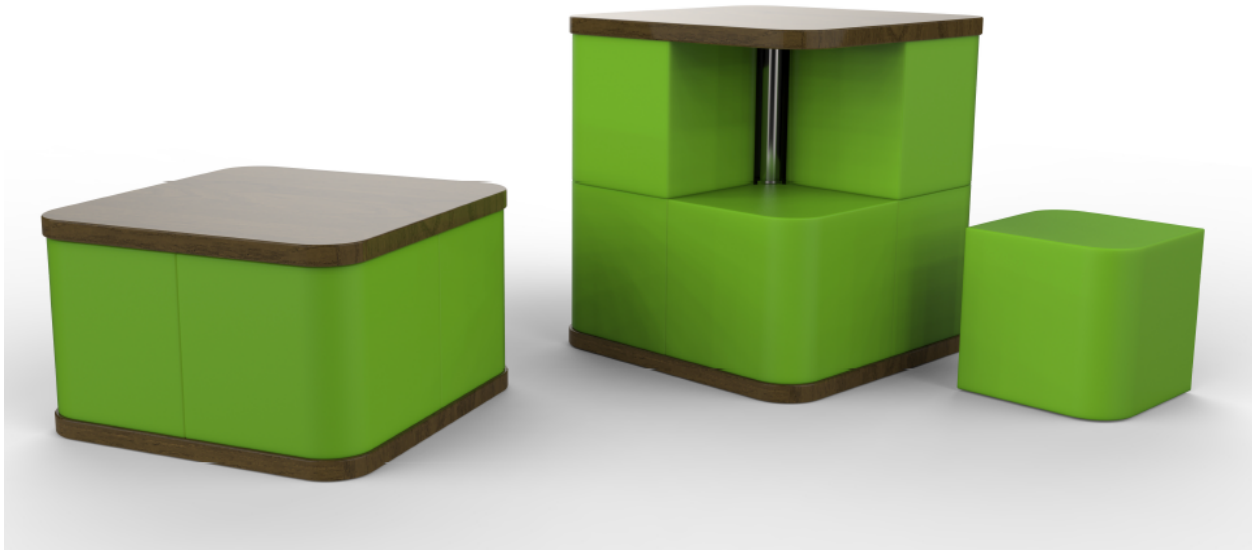


Figure 4. Sheryl's final concept.

Interestingly, on the front page of Sheryl's final presentation document, she listed the company logo the project brief was directed towards, along with a number of descriptors that presumably related to the company sponsoring the brief:

- Product Stewardship
- Environmental Preservation
- Green Building Development
- Regulatory Compliance
- Social Accountability
- Economic Responsibility

It is doubly interesting, then, that the final project presentation never addressed these areas of clear normative concern, and similarly, that the professor or client never broached these issues in the design reviews.

5.2 Case Two: Transforming Everyday Laundry in Graduate Industrial Design

Students in this graduate industrial design course were assigned a project focused on transforming the process of doing laundry. The client was engaged in the review process at two different stages—during a formative concept review and a final summative review—and offered the student with the best design an award. Ten students were enrolled in the course, of which seven were included in the provided dataset; one was also present in the undergraduate dataset, but is not included in our analysis.

The industry partner participated in two of the five review sessions in varying capacities, and collaborated in the development of the design brief with the course professor. An excerpt of the design brief is included below:

The goal of the project was to introduce students to real world circumstances, creating specialized projects, and working alongside professionals to solve real world problems.

In this project, a client involved in the global home appliance industry gave students a design brief, 'Outside the Laundry Room.' The client wanted to look outside of an internal definition of 'laundry', defined as machines for washing and drying clothes. Consumers define the 'laundry' process as much broader than simply washing and drying such as gathering and sorting clothes, and folding and putting away clothes. The client is exploring the tension between these two definitions to look for disruptive innovation opportunities.

Students were asked to explore the laundry process for homeowners, specifically focusing on the whole laundry procedure, outside of laundry appliances (e.g., washers and dryers). For the first review, students worked in teams to explore the following areas: Laundry as a family activity, laundry for singles, laundry pride and pressing, laundry and culture, and laundry as a social experience. (based on course materials)

This semester-long project was supported through five design reviews, the majority of which were group crits with peer participation allowed (Figure 5). Unlike the undergraduate course, this sequence of design reviews began with an explicit focus on external research of the target population, which is reflected in a substantial way in the analysis of the first review, included below.

- | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ol style="list-style-type: none">1. Design Research (17-29 minutes)
Discuss three research “tracks” assigned to student groups: laundry and seniors (Julian), laundry as a family activity (Mylie), and laundry and culture2. Concept Review (7-30 minutes)
Discuss three concept boards through group and individual critiques3. Client Review (5 minutes)
Present five concepts virtually to client and respond to questions4. Concept Reduction (8-18 minutes)
Two students elicit advice from students and professor in choosing a final design5. Final Review (N/A)
Students present final design to professor, peers, and stakeholders; only slides available |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Figure 5. Graduate Design Reviews.

5.2.1 Julian: “Toaster-L” Washing Machine

Julian was captured in review sessions 1, 3, and 4, with only slides present for the final fifth review. He was paired with another student for the initial research phase of the project, with an assigned focus area of laundry and seniors. To support this focus area, Julian and his partner engaged in various empathetic research approaches such as prototyping Vaseline-covered eyeglasses to simulate diminished eyesight and a using a shock collar to simulate motion impairment due to stroke. The initial group review with the rest of the class focused primarily on the outputs from the user research that was conducted, centering on a printed presentation document that was viewed by the professor. To demonstrate the overall structure of this initial review, we have completed an interactive sequence analysis (Carspecken, 1996) that documents

the settings that emerged (Figure 6). Settings are hierarchically related to each other, represented by bullets and conversational turn numbers (in brackets).

After completing this sequence analysis, we identified low-inference examples of normative concerns, highlighted in the Figure 6 in red. All of the instances of normative concerns were prompted by the document that the student team had created, with the professor narrating or “re-telling” the document to ensure that he understood their conclusions or to provide emphasis. There were three primary areas of normative concern that were revealed through the user research in this group: issues of designing for a low-income audience, ways in which access to laundry for the elderly was unequal, and capitalist mechanisms to increase sales through vendor lock-in or marketing.

While the document served as a launching point for these normative conversations, the professor did play a role in at least one of these areas to foreground the normative concern. The professor, Simon, started off the initial review by latching onto the low average income indicated by the students early in their document:

Simon: That’s – isn’t that sad?

Allison: Yeah.

Simon: The average income \$21,000.00. And it’s like, you know, think about that.
[J1:7-11]

While this statement opened up a space for normative concern, it was not followed up on by the professor when discussing potential needs of this user group. During the discussion of the main research findings, Julian’s partner Allison led the conversation, foregrounding a number of access issues that they found seniors struggled with when doing the laundry, including: “us[ing] a basket...causes problems with stumbling up and down the stairs” [J1:243], the “limited budget of the elderly” [J1: 273], “paying less attention to the instructions [and the fact] it’s such small print” [J1:227]. The third concern addressed was the issue of marketing products to maximize profits, thereby benefiting the appliance manufacturer. This normative concern was foregrounded as a positive aspect of a design, with the professor suggesting that since users are known to use too much detergent, that the detergent company should just market it to be used for more loads, and thus have users “perceive it as a higher value” [J1:279]. In the following example, the professor expands this market perspective even further, opening up the possibility of using branded consumables that work “perfectly with their machines” [J1:327].

Simon: Okay, yeah. So one of the interesting things I’m thinking about with like the legibility issue and just understanding a lot of those are to do with the laundry products, like the consumables, and it’s historically something that GE hasn’t done. I’m trying to think what consumables they make. I know with they’re fridges now they’re starting to sell like the filters as a consumable and, um, I just – I’m trying to think when they sell a laundry machine, they really don’t get to sell any consumables with it. And one thing we might look at pitching to them is, you know, GE washer and dryer and GE consumables.

Allison: Mm-hmm.

Simon: Whether it be special stain things; things that are like possibly designed to work perfectly with their machines.

[J1:327-327]

- Formal qualities [2]
- User characteristics [3-11]
 - Average income level [3-9]
 - Justification of data source [10-11]
- Student team's approach to doing (empathic) research in this space [12-28]
 - Student experience with vaseline covered glasses [14-28]
 - "fingers kind of fought with ____" [15-17]
 - Difficulty reading words [18-28]
- Document structure/communicative flow [29-39]
 - Formal qualities: redundant image [33-39]
- Other team research [40-72]
 - Student experience using a dog zapper to make them shake [43-51]
 - Data sources overview: three subjects [52-59]
 - Formal qualities: red on gray and bouncing text [60-72]
 - Professor's personal experience [62-67]
 - Scientific/academic explanation of why values bounce [68]
 - Professor's personal experience [69-72]
- Document structure/communicative flow [73-97]
 - Example of learning something new v. redundant information [79-83]
 - Appropriateness of generic picture ("pop[ping] out") [84-97]
 - Formal qualities: colors not present elsewhere in the document/type bouncing [86-97]
- Differences found in interviews [98-150]
 - Themes: common problems [102]
 - Formal qualities: cropped top of page [103-107]
 - Themes: increased problems with age [108-110]
- ASIDE: professor request to dig deeper [111]
 - Additional themes [113-121]
 - Users not measuring detergent [115-118]
 - Users don't use a basket or have to transport their supplies [119-121]
 - Formal qualities: redundant image [123-133]
 - Additional themes [134-145]
 - Detergent pods [134-143]
 - Limited budget of elderly [136-137]
 - Product marketing for better use of pods [138]
 - Misuse of pods [140-143]
 - Folding spaces and associated difficulties [144-145]
- ASIDE: student notes this interview was shorter and a phone interview [146-147]
 - Stain treatment [148-150]
- Top five problems/summary [151-176]
 - Bending over; stain treatment; storage; legibility of products; messy/dirty spaces [153-156]
 - Possible marketing/product opportunities in this space [157-163]
 - Branded stain treatment to work with GE's washing machines [161-163]
 - Summary in document [163-167]
 - Formal qualities: type too small to read well [168-176]
- Deliverable type as PDF [177-207]
 - Is the image resolution high enough? [181-184]
 - Technical issues in getting high enough resolution [185-206]
 - Technical solution from professor [207]

Figure 6. Julian's design research review (normative concerns in red).

Following the first review, Julian drastically changed focus, moving to concepts that appear directed more towards a business professional than the elderly. By his next available review—the client review—his sketched concepts ranged from a suit cleaner to punching bag washing machine to express washing machine (Figure 6) to sculptural “hallstand” with micro-vibrations to dislodge dirt. When explaining his ideas to the client over the phone, Julian quickly explained the core idea of each concept, and then after client prompting, he provided more detail alongside critique from the client on each concept. His descriptions provided virtually no information about the user or use context he intended, and the discussion centered on the technical functionality of each concept. There were implicit references to gender norms (e.g., punching to wash clothing, fixation on suits and business clothing), but no other areas of normative concern that were broached in the first review appeared in this formative review.

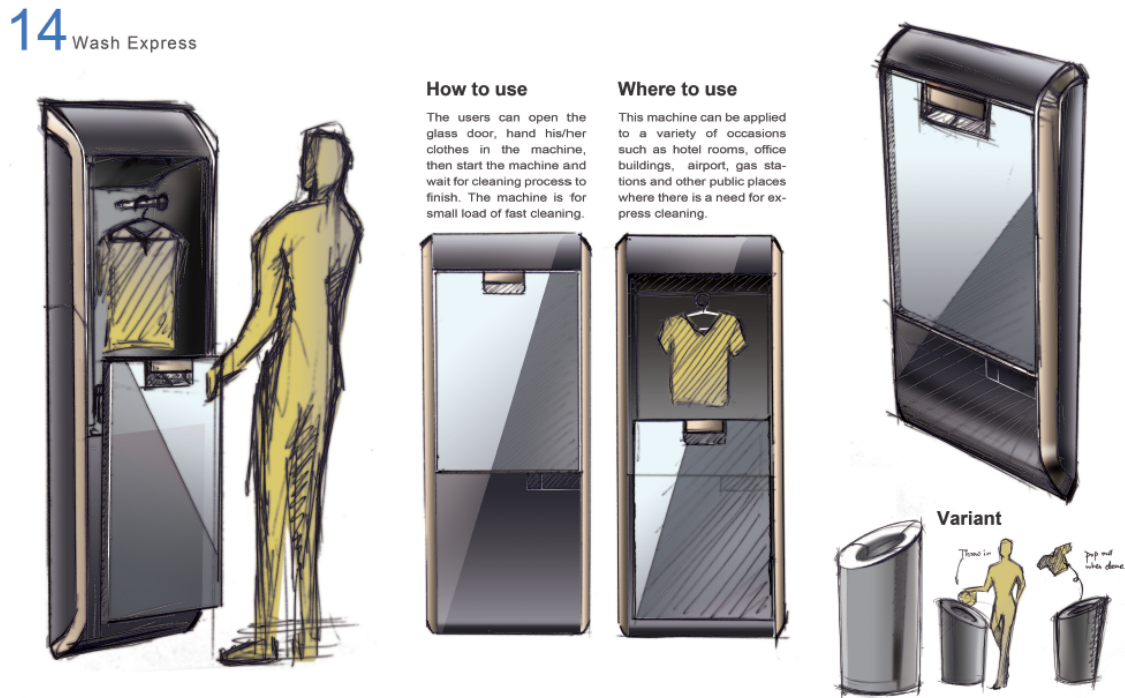


Figure 6. Example concept sketch from Julian's third review.

In the fourth review, the conversation was primarily focused on narrowing the five concepts the client had critiqued down to one that would be finalized and presented at the conclusion of the semester. While few normative concerns had emerged in previous reviews, even fewer appeared in this review. The other students were substantially more active in this group critique than those previous, and in many cases, the native speakers in the group articulated their interpretation of Julian's design when Julian appeared unable to express himself fully. The conversation centered on two of the design concepts from the previous round: a specialty hanger and an express washing machine. The hanger concept was eventually discarded, but before doing so, the

professor and Mylie interacted with the concept in relation to business travel, talking through the following scenario:

- Simon:** And ‘cause a lot of times it’s – in a good hotel they have hangers in the closets. In cheap hotels they don’t. So often I usually bring hangers with me when I’m at a cheap point on the budget plan and, and, so that would be very nice to – plus not having to unfold them or unroll them, hang them up and then redo it all the night before you go.
- Mylie:** The other thing is that although he might – you might find that there is enough hangers. The ladies find there is not enough. [J4:51-52]

The conversation then shifted to a largely technology and interaction-centric discussion of the “toaster” washing machine, where the professor explained: “you throw your clothes in like a toaster and it pops out clean. I loved that one.” [J4:19]. Drawing from Julian’s relative lack of discussion or rationale, the professor expanded this explanation further on in the review, explaining the market niche in which this product could rest:

- Simon:** To me this one, I look at this as a refresher more than a washing machine. So if I think about if I want to bake something, I have –
-- an oven to bake it in, right. Like a turkey. I wanna make a turkey or potatoes or something like that. I have an oven. It’s a very large thing and it heats it up. It bakes it, okay. If I want to make toast, I just take my bread, stick it in the toaster, pop it down and it pops up and it’s done. It only does – it doesn’t do everything. I can’t make much in a toaster other than toast. I might be able to put in like a Pop-Tart or a pastry and warm it up, but that’s all that a toaster does.
- I could see this. I get done with my day. I wore my shirt. I didn’t spill spaghetti on it and it’s not really dirty, but it smells like me. I want to refresh it. Instead of putting it in the big laundry machine, [J4:77-80]

- [...]
- Simon:** Yeah. I was excited about the high technology. He has a toaster. Not a – not to replace a washer and dryer, but something that does one specific thing, which is to make something smell better. [J4:136]

Table 2. Normative concerns expressed in Julian’s design reviews.

	1	3	4	5
Barriers to access (especially elderly)	●			
Designing for low-income	●			
Market-driven design	●			○
Vendor lock-in	●			○

	1	3	4	5
Hedonic qualities				○
Laundry as gendered		○		

● explicit; ○ implicit

The final concept proposed by Julian (Figure 7) shows a clear divorce between his group's early research and his final design concept (Table 2). The 31-slide presentation document includes no indication of his projected user or context of use, but based on the normative positioning provided by the professor in the fourth review, it appears to be a device intended for a privileged businessperson. The most substantial inscribed norm is the duplication of laundry technology in a boutique form, intended not primarily to clean clothes, but as the professor noted in the previous review, to “make something smell better” [J4:136].



Figure 7. Julian's final washing machine concept.

This concept, while scaled down substantially from the original “closet” version of the concept in the third review, almost directly counteracts the norms that emerged in the first review. The final design does not solve any of the accessibility issues the elderly faced in Julian's group's research, and the final device appears to be directed towards high-income professionals rather than low-income seniors. Further, the device emulates the vendor lock-in hinted at by the professor in its use of proprietary pellets to drive the hybrid dry cleaning wash cycle. While the design

succeeds in a “blue sky” sense by pushing the boundaries of the laundry experience, in doing so, it appears disconnected from any normative realities of use or consumption.

5.2.2 Mylie: Sculptural Drying Rack

Mylie was captured in review sessions 1, 2, and 3, with slides only present for the final fifth review. She was paired with another student for the initial research phase of the project, with an assigned focus area of laundry as a family activity. To support this focus area, she and her partner investigated four distinct types of families with a range of living styles. The initial group review with the rest of the class focused primarily on the outputs from the user research that was conducted, centering on a printed presentation document that was viewed by the professor. As with the previous case, we created an interactive sequence analysis to demonstrate the overall structure of the initial review, including the settings that emerged (Figure 8).

After completing this sequence analysis, we identified low-inference examples of normative concerns, highlighted in the Figure 8 in red. All of the instances of normative concerns were prompted by the document that the student team had created, with the professor narrating or “re-telling” the document to ensure that he understood their conclusions or to provide emphasis. There were three primary areas of normative concern expressed through two of the user case studies and two of the initial concepts the students produced: laundry as gendered or sexist, intersecting play and responsibility for children, and “green” laundry behaviors and ability to dry laundry naturally.

While the document served as a launching point for these normative conversations, the professor did play a role in at least one of these areas to foreground the normative concern. After observing some of the gendered issues Mylie and her teammate addressed in the document, the professor remarked: “So you also found laundry rather sexist” [M1:135]. This simple statement opened up the conversational space, prompting Mylie to share other aspects of this gendered perspective: a woman as “control freak” [M1:136], laundry “mak[ing] the flat smell impossibly good” [M1:139], and that “women want color other than white” [M1:145] for their laundry surroundings. The third concern addressed was the issue of being environmentally friendly in relation to doing laundry, which followed through the entire design process for Mylie. Later in the initial design review, the professor noted: “You know, a lot of communities have sort of outlawed drying outside in the US. This is just a US thing that it’s not classy to hang your clothes up outside to dry.” [M1:320]. This reflection on the students’ document prompted a conversation about an initial version of a sculptural drying rack concept, intended for indoor use, which was carried through to Mylie’s final design in the client review.

- Social talk (switching teams) [2-13]
 - Explaining American idiom “short end of the stick” [6-13]
- Context of research and area of interest [14-75]
 - Data collection [18-41]
 - Location [18-20]
 - Differences between family types [21-41]
 - Formal qualities: source of cartoon [42-55]
 - Guessing the artist [46-51]
 - Critiquing the caricature style [52-55]
 - Formal qualities: image and line length [56-75]

- Shorter line length needed for readability [58-60]
 - Background image visibility and issues when printing [61-70]
 - File size of PDF [71-75]
- History of techniques from document [76-82]
- Interviews [83-273]
 - UK interview [83-128]
 - Skype process and issues [87-101]
 - Formal qualities [104-110]
 - Good use of italics/quotes/point size [104]
 - Sketch font for titles not readable [104-110]
 - Discussion of word shape and readability [105-110]
 - Roles of spouses in doing laundry [111-119]
 - Filming spouse doesn't normally help [116-119]
 - Color-coding of problems and solutions in document [120-128]
 - Use in ideation [128-128]
 - Second case without kids [129-181]
 - Laundry as (potentially) sexist [134-151]
 - Female participant is a control freak, not just division of labor issue [136]
 - Likes the scent of laundry (and men might try to eliminate it) [139-144]
 - Laundromat should be colorful; women want color, not white [145]
 - Doesn't use a basket [152-181]
 - Uses soft bags for dirty laundry [156-168]
 - Ability to throw whole bag into laundry at once [160-168]
 - "That's a guy thing, isn't it?" [160]
 - UK v. US assumptions of drying clothes [169-176]
 - Use of energy when drying [176]
 - ASIDE: naming of participants [178-181]
 - Third case with newborn and two other kids [182-224]
 - Laundry difficult with kids around [184-186]
 - Carrying a basket is difficult [185]
 - Laundry baskets spread through house [185-186]
 - Husband has his suits dry cleaned [187-190]
 - Three-compartment sorter [193-224]
 - Used to sort kids clothes [209-213]
 - Kids are involved in sorting clothes into washer [214-224]
 - Fourth case with family and school-aged children [225-252]
 - ASIDE: naming of participants [225-235]
 - Formal qualities: reduce line length [230]
 - Weekend washing primarily [236-243]
 - Use of space to hang clothes over the dryer [244-252]
 - Final case of family with four older children [253-273]
 - Temporary storage of clothing on floor [260-273]
- Results page [274-297]
 - Confusion over issues professor is seeing [275-283]
 - Need for more synthesis and actionable insights [285-290]
 - Ideate more broadly without considering the "realm of possibility" [291-295]
- Preliminary ideation [298-329]
 - Rocking horse concept [302-310]
 - Speculative suggestion of washing by rocking [306-308]
 - Integration of play and responsibility as rationale [309]
 - Sock clipper [311-313]
 - Already on market [311]
 - Sculptural drying tree [314-323]

- As a reaction to not being able to dry clothes outside in the US/being green [320-323]
- Formal qualities: unintegrated quotes/leftovers [324-328]
 - Need for “gems” to be more clear: looking for the “ahas!” [329]

Figure 8. Mylie’s design research review (normative concerns in red).

Mylie’s second and third reviews were focused more intently on concept development, using student sketches as the primary boundary object instead of the research document produced in the first review. In the second review, the sculptural drying rack and a dress-like concept were discussed in a more cursory way. While no completely new normative concerns were introduced, the professor did ask two questions which stimulated additional conversation around the “green” laundry issues from the first review. First, the professor asked “Right. So you’re trying to bring nature into the house, the idea. Um, is, is it – is it a product?” [M2:14]; he was initially confused that the sketch represented the tree-like sculptural rack in an outdoor-like space, and Mylie had to clarify that she was bridging these spaces, drawing on the normative concern from the first review. Second, the professor foregrounded the issue of laundry being hidden, a minor issue raised in the case studies from the first review. He underscored the product Mylie had produced as a reaction to the common instinct to “hid[e] your laundry away” [M2:20]. In both of these examples, we see a reiteration of normative concerns first surfaced in the first review, attenuated to allow for more focus on the product or material considerations.

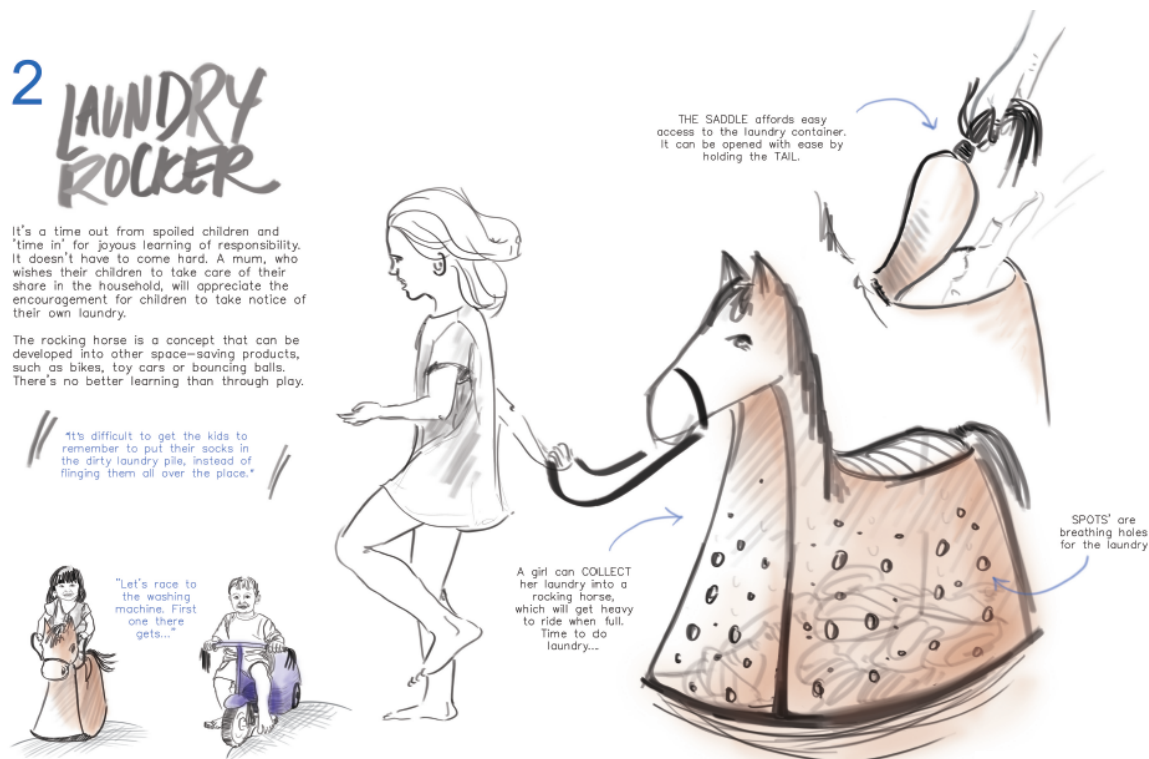


Figure 9. Example concept sketch from Mylie’s third review.

In the third review, the use of normative concerns from previous reviews was expanded even further. This review centered on five developed concepts in a virtual presentation to the clients.

While the professor was not a part of this review in a direct way, Mylie began to use the normative concerns developed earlier in the process as a narrative device to explain her design rationale. Using this formula, Mylie addressed the desire to dry clothes outdoors, making laundry visible in the home, integrating children’s responsibility and play (Figure 9), and the comfort of the smell of laundry. In addition, the client also raised two normative concerns surrounding energy use (“green” laundry) and the potential for mixing scents between male and female clothing (gendered laundry practices). We see different approaches to recognizing normative concerns in this review, however; the clients focused on concerns that translate to customer needs and potential sales, while Mylie focused on hedonic concerns surrounding the laundry process, seeing sales as a distant byproduct. This difference in strategy can be seen clearly in two separate exchanges surrounding “green” laundry:

Client: Ya’ know, we talk about the dryer is, is – it is very much an energy hog. It uses a lot of energy to move all that moisture out of clothes.

Mylie: Right.

Client: And anything we can do to promote air drying is, is a definite benefit.
[M3:86-88]

Mylie: -- for the kids. Cool. And then the last one is so it’s after the laundry is done, where do you put your clothes. Not all clothes can be, uh, machine dried and increasingly there is also a trend of people wanting to have their, um, uh, clothes dried in a – in a natural layer, but also from a research – uh, I mean, some of the – some of the, uh, participants were based in Europe. So their – the drying machines are not that common. [M3:37]

Table 3. Normative concerns expressed in Mylie’s design reviews.

	1	2	3	5
Laundry as gendered	●		○	○
Intersection of play and responsibility for children	●		●	
Being “green”	●		●	●
Visibility of laundry	●	●	●	●
Nature and indoor space	●	●	●	●
Spouses doing laundry	●			

● explicit; ○ implicit

The final concept proposed by Mylie (Figure 10) clearly draws on early research carried out in the design process (Table 3). While the design does not appear to be explicitly designed for families—particularly ones with small children—the sculptural drying rack/breezer nevertheless

challenges a number of normative assumptions about the visibility of laundry in the home environment. The most broadly reaching inscribed normative concern references the diminishing ability to dry clothes outdoors, as is still common in Europe, and has been the practice of humanity for millennia.



Figure 10. Mylie's final drying rack design concept.

This concept directly counteracts the social stereotypes of hanging clothing in the United States, as either being less “classy” or outright illegal, in some communities. In bringing the drying experience into the interior of the home, this concept also deviates from expected laundry practices, refiguring a drying rack as innately figural or sculptural—as something that should be celebrated and visible, rather than relegated to a hidden room or basement. Some of the gendered practices surrounding laundry also appear to be infused into the final design, including the colorful components (a reaction against the white, “male”-inspired sterility of laundromats) and the visibility of laundry, not as clutter, but as part of a larger aesthetic experience of living.

6. Discussion

Across these two industrial design contexts, we have identified the emergence or absence of discussion surrounding issues of normative concern. There is a striking difference between the two levels of students and in the character of the design briefs which, we believe, contributed to the relative prominence of normative concerns or awareness of normativity in the design review process. First, we will explore how the location and source of emergence affected the final design outcome, including the roles taken on by the students and professor in each context. Second, we will address the implicit and explicit pedagogical interactions surrounding issues of normative concern, including the impact of working on projects that arose from industry partnerships. Finally, we will address some more general implications from this study for design

pedagogy, including ways to increase the awareness of normative concerns throughout the design review process.

6.1 Location of Normative Claims

Normative claims only arose in explicit form—where they could be objectivated, or able to be discussed as separate and distinct from the main line of conversation—in the earliest review sessions on the graduate level, if they were going to arise at all. Interestingly, the design research phase in the graduate course seemed to be the primary driver in foregrounding normative concerns; for Julian and Mylie, any norms that were going to emerge in their design process emerged during this phase. In the undergraduate course, where no such formal research review was conducted, virtually no normative concerns were foregrounded. It is possible that the traditional competitive review section and related collections of inspirational design precedent, as is typical at this level of studio, is inadequate to foreground issues of true normative concern without additional exploration. In other words, without student and instructor engagement in an end-user focused research phase, normative concerns that challenged existing or traditional views seemed to be easily ignored.

In the four cases we evaluated, the professors were not an active agent in recognizing issues of normative concern in the design concepts and capitalizing on those issues for future discussion and thematization. Almost without exception, if a discussion of normative concern arose, it was because the student had already thought about the underlying concern and had represented it in some low-inference way in their design concept or related presentation deck. When the normative concerns emerged to the level of review conversation, it generally resulted from the professor “re-telling” the research findings, and bringing them into the interactive setting for further consideration. Since the undergraduate course did not include a formal design research component, and possibly also due to the lack of a group crit, no such “re-telling” was possible, and as a consequence, no normative concerns were foregrounded.

In the case of Julian, we see an interesting progression: multiple areas of normative concern were foregrounded in the design research phase, but none of these, including the design context/user implied by that research, were integrated into the concepts that were presented in the design review sessions that followed. This lack of follow-through from research into the concepts was never mentioned by the professor in subsequent reviews, and the final design Julian presented appears to be intended primarily for an audience of privilege—transforming the laundry experience, but without substantive engagement with the normative concerns of the elderly population he started by exploring. In this way, Julian’s experience was more resonant with the product-design-as-art perspective, where there is an underlying desire to simply design beautiful objects, with potential social impact as a secondary or tertiary concern. His existing beliefs and experiences appeared to form a powerful hegemony, which when left unchallenged in the review experience (as mediated by the instructor), limited attention to alternative normative framings of the project he was creating. These normative concerns represented design tensions to be avoided rather than engaged with and addressed as productive constraints.

Mylie provides an interesting counterpoint to Julian’s experience, as she seems to play the role of the classically motivated student. She identified a number of normative concerns in her initial research, but unlike Julian, she capitalized on these norms by inscribing them—intentionally or not—in all of her early concepts. While the professor foregrounded the norms Mylie noted in her

presentation document by “re-telling” her design process, he did not appear to expand on these norms beyond the point she had already considered. Following the initial review, Mylie continued to develop her concepts in relation to the normative concerns she outlined early on, and her final concept can be directly traced back to one of the initial concepts—and a cluster of normative concerns—in the first review.

6.2 Pedagogical Interactions Around Normative Claims

Almost all normative claims arose in the early review process, particularly in the research phase for graduate students, where external data was collected and interpreted by students. After this point, the conversation was not highly divergent, and virtually never involved any introspection into the inscribed ethics or norms of a particular design concept or related design precedent. Instead, the professor appeared to center the pedagogical interactions around the formal qualities of the designed artifact (graduate and undergraduate) and/or the presentation qualities of the document created by the student (graduate). Even in the graduate course, where the design research phase had provided rich examples of human interaction in the laundry experience, these scenarios were not taken up in the following design reviews; instead, the reviews became increasingly narrow, focusing on material selection, technical limitations, or formal qualities of the presentation document. Curiously, no normative concerns made a first appearance in the final reviews, with most being further backgrounded in talk as the reviews progressed, if at all. This lack of continuing attention to normative concerns seems counter-intuitive, because as we design, we discover more, and are able to more fully realize how the product being created might be used.

Another interesting feature of these two design projects was the nature of the education and industry partnership, and the effect of this partnership on student behavior. Students were offered cash awards—and in the case of the undergraduate course, an internship—for designs that were deemed appropriate by the client. While this produced designs that met the specifications of the industry-oriented brief—a valuable pedagogical focus, both in simulating real-world conditions, and increasing student motivation—it also had the potential to subliminally communicate norms of capitalist production for a privileged audience. The industry focus seemed to have a substantial impact on the kinds of design concepts students were able to focus on; a design practice intended primarily for consumption within a constrained North American audience. Perhaps this focus altered the potential normative concerns that students felt could be productive addressed in the design of laundry experiences and business seating; noticeably absent were discussions of material sustainability (Su et al., 2014), user needs (beyond a cursory discussion of material qualities, such as comfort or durability of fabric), or the normative implications of the design problems they were assigned to address, even though these normative concerns could have easily been broached early in the design review process.

6.3 Implications for Design Pedagogy

The location of emergent normative concerns and the pedagogical structures that reinforce specific patterns of emergence imply the need for a shift in the way design education is enacted. We wish to call out two particular areas for focus in future curricula: 1) a reimagining of what studio should focus on—moving from an almost wholesale reliance on industry-centric briefs to a more distinct focus on the character of the developing designer; and 2) greater attention to the kinds of design activities that encourage the emergence of normative concerns in a systemic, rather than modular, way. Many attempts to include issues of ethics or social responsibility into

design curricula have limited the introduction of these topics to specific, focused courses, but we advocate for a more holistic approach—encouraging students to develop the ability to question normative assumptions as an essential part of building their design character, across the entire curriculum.

6.3.1 Design Character

The studio forms the basis of much of what we know as design education, and in the modern era, the studio has focused on student development through authentic design activity. While this design activity has been commonly framed through design projects, the shift from more theoretical concepts to “market-ready” concepts appears to be a more recent shift. What the student might gain in terms of relevant practical experience by working within these industry partnerships should not be brushed aside; but neither should the hegemonic structures that are in play when pedagogy is subsumed by commercial concerns. If we reconsider the purpose of the studio—or perhaps imagine it apart from the modern era of commercial design—what role might the development of design character play within the functioning of the studio, both socially and pedagogically? Have we unknowingly made a decision to release our agency in lieu of the quickest path to commercial gain?

In the two courses we focused on in this study, normative concerns are never focused on by the professor; and when they arise organically due to student attention, they are not taken up by the professor, either out of ignorance, or because the professor seemingly felt it was not important. Instead of relying on the typical structures of design briefs and reviews to surface the appropriate kinds of pedagogical activities that reinforce the development of design character, we must be more explicit about the ways in which the ethical qualities of the design and designer are accounted for at every stage of the educational process. These cases suggest that normative concerns were not a valued aspect of design. If we do in fact value these concerns, they must appear as a more important part of the educational process, including formal and informal pedagogical structures.

6.3.2 Supporting Normative Concerns

In this study, we demonstrated the power of the design research phase in foregrounding normative concerns. While this is a good place to begin, we propose that more work is needed to develop sustainable pedagogy that engages with normative concern on a systemic level. Rather than imagining the ethical positioning of the designer in isolation—in a modularized fashion—issues of normative concern should pervade the classroom experience for design students. We see attention paid to normative concerns emerging organically through instructor-student interactions, rather than via specific prescriptive curricular methods, because the design review, by its nature, focuses on opportunistic teaching (Howard & Gray, 2014). By focusing on material without considering sustainability, or considering the aesthetic beauty or form of a product without understanding how the product implicates privilege in any number of ways, or designing a product in isolation from context-sensitive use—we have already framed the conversation with developing designers about what is important. In these design reviews, the frames were built for these students without reference to normative concerns.

Supporting normative concern in a systemic way begins with the roles students and the professor take on in the studio, and center around the construction of the design brief. In the undergraduate course addressed in this study, the design brief indicated what normative concerns were to be

supported (i.e., informal meetings in a business context) without any space to question assumptions; this framing tacitly repressed design solutions outside of a certain space, and backgrounded or ignored any relevant normative concerns. We suggest that the framing provided to students should be considered through a normative lens, and that students should be encouraged to interact with the often messy ecologies of sustainability, gender, and privilege; in doing so, they not only deepen their understanding of the design problem, but also produce more contextually appropriate designs with intentional, explicit inscribed norms.

If, as design educators, we are going to say that a moral education is vital for design students, we must prioritize it in our teaching. When we limit the design space in these early stages—either through pre-framed design briefs, or through inhibiting conversations of a critical nature—we tacitly endorse the designer as “servant of commercialism” (McCoy, 1990, p. 22) rather than the designer as active agent of social change. Refocusing the conversation on the development of a designer’s character, rather than just their technical or creative ability, is a first and critical step.

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