Dialogue

Dialogue: Proceedings of the AIGA Design Educators Community Conferences

DECIPHER

2018 **DESIGN** EDUCATORS **RESEARCH** CONFERENCE

DIALOGUE: PROCEEDINGS OF THE AIGA
DESIGN EDUCATORS COMMUNITY CONFERENCE

M STAMPS
SCHOOL OF ART & DESIGN
UNIVERSITY OF MICHIGAN

AIGA Design Educators
Community

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2018 DESIGN EDUCATORS **RESEARCH** CONFERENCE

COMING TOGETHER FOR DESIGN RESEARCH

Decipher 2018 was a hands-on design research conference by the AIGA Design Educators Community in partnership with the new DARIA Network (Design as Research in the Americas). The conference brought together 228 people from 12 countries to address crucial themes of *defining*, *doing, disseminating, supporting,* and *teaching design research.*

Hosted by the Penny W. Stamps School of Art & Design at the University of Michigan, Decipher:

- Connected emerging and experienced design researchers in academia and beyond
- Gathered and shared best practices, resources, tools, and exemplary research matter
- Helped participants hone research plans and writing skills
- Created opportunities for dialogues to foster mentorship and collaborative connections

BACKGROUND

Decipher 2018 was conceived as a multidisciplinary design space for academics and practitioners to discuss the nature, relevance, and opportunities of design research. Designers increasingly work to understand and address complex interconnections while creating new things, especially when taking on challenges like social or environmental concerns. People interpret the word *design* in many ways; when *research* is added to the mix, the ambiguity increases. Decipher brought together design researchers, practitioners, and educators at all stages in their careers to explore the fusions of research and practice through the ways we accomplish, talk about, and teach design research.

AN INCLUSIVE SUBMISSION PROCESS

We included a number of submission and participation formats to engage people at different stages and degrees of comfort with design research. All Decipher attendees submitted written contributions in two modalities: the first was for *facilitators*, those interested in leading an engaging session for conference attendees around a particular design research subject; the second was for *participants*, those who wanted to be involved in sessions while bringing a particular research interest into discussions among all attendees. During the conference, we shared a digital draft of the proceedings that included all facilitator and participant submissions in order to guide session selection and promote conversations and networking during the conference. Likewise, everyone at the conference, including keynotes, facilitators, and participants had their headshots and biographical descriptions included on the conference website.

Due to the democratic nature of our submission process, we wanted these final proceedings to be a permanent record of the various voices of Decipher 2018. The conference regarded all contributions, regardless of length, of equal value.

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PARTICIPATORY CONFERENCE STRUCTURE

Decipher 2018 introduced a series of themes around design research: defining, doing, disseminating, supporting, and teaching design research:

- *Defining design research* is concerned with the nature of and knowledge produced by design research: What is design research? What is not design research? What are the types of knowledge design research generates? What is the nature of this knowledge?

- *Doing design research* involves exploring the theories, methods, processes and creative outcomes that support design as a form of inquiry and how we "do" design research.

- *Disseminating design research* includes the ways we share this work, such as writing about projects or ideas for publication, and how we communicate the value of design research to other disciplines.

- *Supporting design research* is concerned with the resources and procedures to sustain financial, institutional, industry, and peer support for design research projects and initiatives, including writing successful grant proposals.

- *Teaching design research* cultivates an inquisitive mindset in students at the K–12, undergraduate, master's and PhD levels and includes sharing methodologies, theories, and processes of making and how it produces knowledge in design.

For context, these themes appeared throughout the three types of sessions that comprised Decipher 2018. Accepted facilitation and participation submissions from the conference's Activity Groups, Workshops, and Conversations are included in these conference proceedings. Documentation and synthesis generated by the designated facilitator(s) are included in these proceedings. Some background on these session types:

Activity Group: an intensive hands-on session in which all participants collaboratively discuss and ideate on a specific topic to discover emergent themes and issues, develop best practices and guidelines, and gather resources.

Conversation: a relaxed environment to allow participants to discuss the intersection of facilitator and participant interests through the lens of the conference topics as well as the AIGA 2025 trends (now Design Futures).

Workshop: a more traditional learning session in which one or more facilitators lead participants to engage in a topic within the conference themes. As in a classroom environment, workshop facilitators had specific learning outcomes in mind for participants and were expected to lead the entire session (in contrast to the more collaborative activity group or conversation formats).

Decipher's unique format welcomed novices and experts alike and designers of all stripes. An emphasis on these hands-on sessions (Conversations, Activity Groups, and Workshops) reinforced person-to-person discussion, collaboration, networking, and professional development. Participants helped each other to gather ideas, best practices, and other exemplary research-oriented matter. Facilitators from a variety of backgrounds offered resources, tools, and mentorship to our design community to strengthen the collective quality of our research.

The Stamps School of Art & Design generously funded ten Equity Scholarships for Decipher facilitators or participants identifying as historically underrepresented in academia, which contributed to the heterogeneity of the perspectives and dialogues at the conference. We hope that these scholarships will establish a new precedent for future design education and research conferences.

Many thanks again to our participants and facilitators—we set the stage, but it was you who brought this conference to life! We look forward to following your next steps in design research, education and practice.

Warm regards,

Kelly M. Murdoch-Kitt & Omar Sosa-Tzec

Decipher 2018 Conference Chairs

Penny W. Stamps School of Art and Design, University of Michigan

ACKNOWLEDGMENTS

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2018 **DESIGN** EDUCATORS **RESEARCH** CONFERENCE

IN THIS SECTION

Finding and Leveraging Your Through-Line

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Keywords:
narrative, interdisciplinary, research agenda, dissemination, strategy

For pre-tenure academics and interdisciplinary practitioners, articulating the big picture of one's work or research agenda can be extremely difficult. Often academics and practitioners are tied to "traditional" research methods such as writing and publishing and hesitate to define practical applications, hands-on making, experimental processes, and other wacky and weird ideas as "research." This discomfort in calling ourselves researchers can make our projects, sketches, and ideas feel disconnected, at different stages of development, or even too obtuse to articulate. Yet there is a discoverable through-line in everyone's oeuvre in the form of an idea, creative process, or theory that can be leveraged. We posit that by discovering and leveraging the through-line of the work from an interdisciplinary perspective, one's research agenda takes on an individualized focus and a narrative drive especially applicable to the lecture formats required for conferences, speaking engagements, gallery proposals, client acquisition, the academic job-hire process, and beyond.

Academic job searches are one example where the lack of a concise narrative arc when describing one's research can be extremely problematic. We have experienced the academic hiring process both as candidates and as hiring faculty. We have participated on multiple search committees, as either committee chair or member. Commonly, as part of the academic hiring process, finalist candidates are required to present their work in a 60-minute lecture format, and are expected to describe their research agenda and plans for execution over the multi-year tenure process. Our experience as interviewees, as well as serving on these search committees, has allowed us to see how a variety of designers

present and discuss their research in an academic setting—some successful and some not so much. Successful candidates articulate their vision precisely, weaving smaller bodies of work into a larger and sweeping narrative; they foreground their through-line. Ineffective candidates do not establish a through-line; the presentation of their research can appear disorganized, chaotic, and unfocused with the description of every project feeling like the start of a new conversation. These candidates might have great ideas, design skills, and drive but are unable to communicate the bigger picture of their work, even in cases where it might be apparent to the audience. This lack of awareness and clarity serves as a red flag for the hiring committee. A through-line is necessary because it establishes a lens through which the audience sees, understands, and interprets the work—the overarching *what* and *why* of the research. The audience should be able to focus on the potential success of the candidate's work over the long term, rather than find themselves critiquing disparate parts in the short term. Discovering and defining a connection between each project, experiment, investigation, and/or body of work proves the research's fecundity via a deeply rooted theme, regardless of whether each individual project is ultimately successful, or even fully resolved.

Our expertise in this area comes from our current roles as junior faculty members and interdisciplinary creatives. Kimmie, entering her second year in the tenure process, is continuing to refine her through-line. She is planning, making, evaluating, and revising what forms of research and dissemination are appropriate to her through-line as she builds her CV by applying for opportunities such as grants, residencies, writing opportunities, client work, conferences, and the like. Meaghan, entering her sixth and final year in the tenure process, is perfecting, polishing, and justifying her through-line to present for promotion. We represent both ends of the assistant professor experience as well as the role of creative practitioner and see an opportunity for mentoring in terms of how to discuss and present design work and research. It is common in the realm of both academia and design to discuss, share, and receive feedback from colleagues, peers, and mentors on individual projects, investigations, and writing samples.

However, it is rare to receive feedback on the overarching themes present within our larger body of work. Buzzwords and broad industry-specific language can make this feedback feel anything but individualized.

"Finding and Leveraging Your Through-Line" was geared toward interdisciplinary practitioners and educators seeking to holistically articulate the scope of their creative work and affirm their chosen dissemination methods. This workshop helped participants develop a narrative arc that substantiated the multifaceted nature of their research, along with a formula to articulate this agenda concisely in two sentences or less. New perspectives on personal research agendas were discovered through guided, hands-on activities and sharing with other participants. For example, a paired exercise had participants use a visual mapping technique to evaluate their recent research and creative activity. Participants then shared their research maps with a partner, together discovering connections within seemingly disparate projects, experiments, and ideas—and broadening the definition of design research. By practicing the articulation of their research agenda, participants gained experience, clarity, and confidence. Opportunities for future collaborations between participants with shared research interests arose through open dialogue. The workshop concluded with an invitation to continue the conversation after the conference in the form of additional at-home exercises and an online participant forum, as well as suggestions for how to most effectively utilize one's newly defined through-line.

With a clear, macro-view of one's work, making and other forms of research and their dissemination gain purpose. It is easy to ignore this necessary exercise of finding the narrative arc in favor of activities that provide more immediate gratification, such as making. Although the definition of research varies from institution to institution, person to person, by connecting with peers in the field we will better understand our own personal research within the larger cannon. "Finding and Leveraging Your Through-Line" provided a forum in which interdisciplinary methods beyond writing and publication became part of the definition of research, and participants conquered the important and efficient stepping stone of defining their own through-line.

Figure 1

Figure 2

CONFERENCE WORKSHOP

The workshop focused on teaching participants, through a step-by-step process, to "find their through-line." We developed a set of instructional worksheets (Figures 1–5) and a visual presentation to guide participants through the workshop. The worksheets break the process into multi-step exercises including:

Exercise One: Step One: Three Lists (Figure 2)

» First list: Things you've worked on or accomplished you are most proud of; work/research that feels finished and best represents you

» Second list: Things you do that feel on the periphery of what you do in research; outliers

» Third list: Things you want to do in research, but have yet to start

EXERCISE ONE
STEP TWO
THEMATIC MAP

• **Categorize:** Review lists and begin to find themes within content of all lists; create order

• **Prioritize:** Using new thematic organization, consider what topics/themes in your work are most important

• **Strategize:** Understanding your priorities, develop a few strategies to help focus your next steps in research

EXERCISE ONE
STEP THREE
PARTNER CRITIQUE

• **SHARE:** Summarize to your partner your new research themes and discoveries
• **RESPOND:** Help your partner create more connections or relationships using your outside perspective

Figure 3

EXERCISE TWO
STEP ONE
KEYWORDS*

* try to avoid any verbs "to be" such as "is" or "am"
example:
Sarah is a dental hygienist.
to…
Sarah cleans teeth from nine to five.

First list: Keywords to define you and what you do   **Second list:** Keywords to describe the content of your work

EXERCISE TWO
STEP TWO
CONCISE NARRATIVE ARC

First sentence: Form keywords from first list into a cohesive sentence.   **Second sentence:** Form keywords from second list into a cohesive sentence.   **Combine:** Voila! Two-sentence concise narrative arc for your research.

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Figure 4

Exercise One: Step Two: Thematic Map (Figure 3)

» Categorize: Review lists and begin to find themes within content of all lists; create order

» Prioritize: Using new thematic organization, consider what topics/themes in your work are most important

» Strategize: Understanding your priorities, develop a few strategies to help focus your next steps in research

Exercise One: Step Three: Partner Critique (Figure 3)

» Share: Summarize to your partner your new research themes and discoveries

» Respond: Help your partner create more connections or relationships using your outside perspective

Exercise Two: Step One: Keywords* (Figure 4)

» First list: Keywords to define you and what you do

» Second list: Keywords to describe the content of your work

Exercise Two: Step Two: Concise Narrative Arc (Figure 4)

» First Sentence: Form keywords from first list into a cohesive sentence.

» Second Sentence: Form keywords from second list into a cohesive sentence.

» Combine Sentences: *Voila!* Two-sentence concise narrative arc for your research.

Exercise Two: Step Three: Evaluate (Figure 4)

» Share your two-sentence concise narrative arc with a partner. Did it feel authentic when saying it out loud? Did you struggle to keep to two sentences?

Take-Home Exercise: Step One: Tailoring (Figure 5)

» Go back to the First Visual Exercise: Choose one project from each thematic category and recontextualize the summary of this project within the larger body or idea of your concise narrative arc.

Due to time limits, we encouraged participants to use the session to understand each step, the overall workflow, and the "whys" of the process, rather than focusing on perfection while moving through the worksheets. We emphasized the goal of the day was for participants to leave the session feeling confident that they could continue and/or employ the process on their own when needed, rather than "finding their through-line" in perpetuity within the confines of the workshop; the idea that this process is a reusable tool was encouraged at the outset.

Participants worked diligently throughout each section of the process. They were eager to ask questions and were engaged

TAKE—HOME EXERCISE
STEP ONE
TAILORING

GO BACK TO THE FIRST VISUAL EXERCISE:
Choose one project from each thematic category and
recontextualize the summary of this project within the
larger body or idea of your concise narrative arc.

REMEMBER THE WARDROBE EXAMPLE
Your concise narrative arc is your "white t-shirt"; how
many ways can you "wear it" such as in academia, in
professional practice, or casually at a dinner party?

Rewrite your two-sentence concise narrative arc:

Project One: Project Two: Project Three:

TAKE—HOME EXERCISE
STEP TWO
FEEDBACK

SIGN—UP:
Share your best email to be added.

POST:
Post 1–3 recontextualized project summaries to Slack
channel (decipherthroughline.slack.com) by Friday,
October 19th, 11:59pm

FEEDBACK:
Critique Blitz begins Saturday, October 20th and ends
Sunday, October 21st at 11:59pm.

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Figure 5

throughout the workshop. As facilitators, we often had to stop
participants from working in order to move to the next phase of
the process in order to stay on time. Throughout the workshop,
we presented slides to explain each step of the process, provided
examples, and then allowed for structured time for participants to
practice each step. During this work time, we provided hands-on
assistance while encouraging participants to interact with their
peers by encouraging, critiquing, and lending a hand to one another.

A large focus of the conversation during the workshop was about
the role of language, especially for women participants, when
developing their through-line statement. The participants and
facilitators discussed how women often use passive language in
order to avoid appearing "bossy" or "over-inflated." We encouraged
the use of active language and online e-prime tools to promote
effective and confident communication for all genders.

The workshop wrapped with participants standing before their
peers and stating the two-sentence through-line they each
developed during the workshop. Although many participants felt
these were not yet perfect, they were excited and surprised by
the level of clarity they achieved through the exercises. Many
participants asked for copies of the worksheets to use in the future

or share with colleagues not in attendance. A Slack channel was shared with workshop participants upon completion of the session to foster continued progress and collaboration post-conference.

POST-WORKSHOP ANALYSIS

Time is essential to the process of "finding your through-line": committing to the process, allowing ample room for individual exploration, and gathering feedback from peers during the process.

Many participants discussed a pre-conference need to analyze their research from a macro perspective and succinctly describe their work, but they did not allot time for the task as it felt "daunting"; "other more immediate needs in research (like producing/making) was their primary focus, rather than reflecting"; or they "did not know where to start." Feedback from participants during and post-workshop cited that our approach and process was "easy to follow," "a clear structure," and "effective." When asked "Would you use this process again? Yes or no, and why?" participant Vinicius Lima said, "Definitely yes. It had a methodology that was easy to follow. It felt similar to most brainstorming frameworks I was familiar with. But interesting enough, I had never thought of approaching my research agenda this way."

Participants agreed that this process is not a one-time exploration. The process should be revisited annually to realign goals and research. Participant Juste Peciulyte said, "I intend engaging [sic] in it at least three times per year solo, as well as in any collaborations, maybe as part of an ideation process." As facilitators, we encouraged participants to revisit the process in the summer months as they are planning their upcoming academic year, and Lima agrees, "Around October, we are required by my institution to submit annual faculty plans for our research. I think it would be a good time to assess what was done the year prior and how I can move ahead from this. Which ideas fit within this program and which ones do not."

The workshop session time was not enough for the participants to perfect their through-lines but did allow them to learn the process. When asked, "During the process did you discover relationships between your projects that you did not anticipate?" Peciulyte

said, "The time was probably a bit tight to do so, but I felt there is potential for such relations to emerge. Especially if I get rid of the already preconceived ideas/categories about my works … As mentioned above, the time was not enough for me to complete. However, enough time to get an idea how this process works and give it a first iteration."

A component of the workshop and the process that appears to be integral is peer-to-peer connections. Lima said, "my discussion partner discovered more relationships for me than me. She was very helpful in identifying similarities and differences in what I do." During the workshop, many participants joked that the process functioned like "therapy" through discussing problems surrounding their research and identities as researchers. Discussing these issues together helped to build a group mindset and an environment ripe for sharing, forming connections, and building confidence.

With nearly every participant requesting blank digital copies of the worksheets and citing the approach as "effective" and "straightforward," we believe the workshop was successful. A few participants mentioned they were eager to share this process with their peers, students, and clients. Lima said, "This process could be used for integrated campaigns, social justice work, and client work. Figuring out a business or a service's through-line is a wonderful way to define a brand strategy. It helps define their mission, vision, and values. I was also very interested in seeing ways in which I could apply this idea in a portfolio design course. As students are leaving university for the professional world, it may be interesting for them to visualize what they stand for in their work."

CONCLUSION

Identifying and articulating the big picture of one's work or research agenda can be daunting and often takes a back seat to more pressing requirements of academic life. However, following a process designed to uncover the conceptual threads that run through one's interdisciplinary oeuvre can ease the pressure. Our workshop "Finding and Leveraging Your Through-Line" provided participants with a process to follow and forum for discussion with their peers. Participants walked away with insight into their individual research agendas, as well as a system for repeating this exploration annually. Using the knowledge we gained while watching participants move through the process, as well as the post-conference feedback we received, we plan to continue to refine our approach and workshop methodology in order to help more interdisciplinary creatives find their through-line, craft their own personal narrative, and successfully articulate their point of view within the realm of conferences, speaking engagements, gallery proposals, client acquisition, the academic job-hire process, and beyond.

Working from the Outside In: Using "The Big Three" Investigative Phenomena to Situate and Frame Research Endeavors Informed by Design.

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INTRODUCING THE "BIG THREE" INVESTIGATIVE PHENOMENA

The facilitators of this workshop—each having accrued years of experience formulating, practicing, and teaching about design and research—contend that thoughtful ways of thinking, making, and doing informed by rigorous investigative processes (i.e., research) can be enriched and sharpened if such endeavors are situated within the larger, cumulative landscape of design research past and present. This form of contextualization can provide a particular vantage point from which to assess and/or situate one's own research agenda in relation to established investigative landmarks or theoretical vistas. One such situating schema (of many) involves assessing personal research trajectories in light of three broad yet distinct approaches informing and/or shaping many investigations within design research past and present. These approaches are rooted in research that investigate and interrogate:

- designers or the(ir) process(es) of designing[1];

- artifacts, experiences, systems, networks, environments, and communities as outcomes of design that constitute the artificial world[2]; and

- how and why those who are affected by the decisions of designers and their collaborators are affected as they are.[3]

SIGNIFICANCE AND VALUE

Each of these approaches can serve as a distinct means to help define and frame research that informs design decision-making and how design affects and is affected by a diverse array of social, technological, environmental, economic, and political factors and conditions. Moreover, understanding and then working within, in response to, or in departure from these three approaches can benefit novice and seasoned designers and researchers alike. Each approach provides distinct ways to:

1) perceive and describe research circumstances and then

2) formulate and operate particular research methodologies and the more specific methods that emerge from these circumstances.

Participants in this workshop emerged from it having learned how to begin to effectively situate their particular inquiries and examinations in one of these three particular loci of investigative phenomena. In turn, this knowledge enabled them to more adequately identify viable opportunities to both formulate and design research endeavors that could yield new "useful, usable and desirable knowledge"[4] and that had the potential to positively affect change across or within a broad spectrum of arenas. At the larger end of the societal scale, these endeavors include but are not limited to public policy initiatives, sociocultural awareness campaigns, economic stimulus actions at micro and macro scales, and the invention and implementation of adaptive, resilient technology systems that improve lived experiences.

At the smaller end of this scale, the research endeavors include but are not limited to constructing the knowledge necessary to design more effectively and efficiently such artifacts as operable apps, interface designs, and web-based systems targeted for use by specific populations, or online and printed instruction manuals that articulate procedures for operating or maintaining mechanical or digital devices. This scale also includes digitally facilitated advertising or other visual messaging campaigns that are designed to tailor content delivery based on active input from consumers or other end users, which could then allow design "consumers" some measure of control over the quality of their experiences. Additionally, it includes an ever-increasing amalgam of data-aware devices that
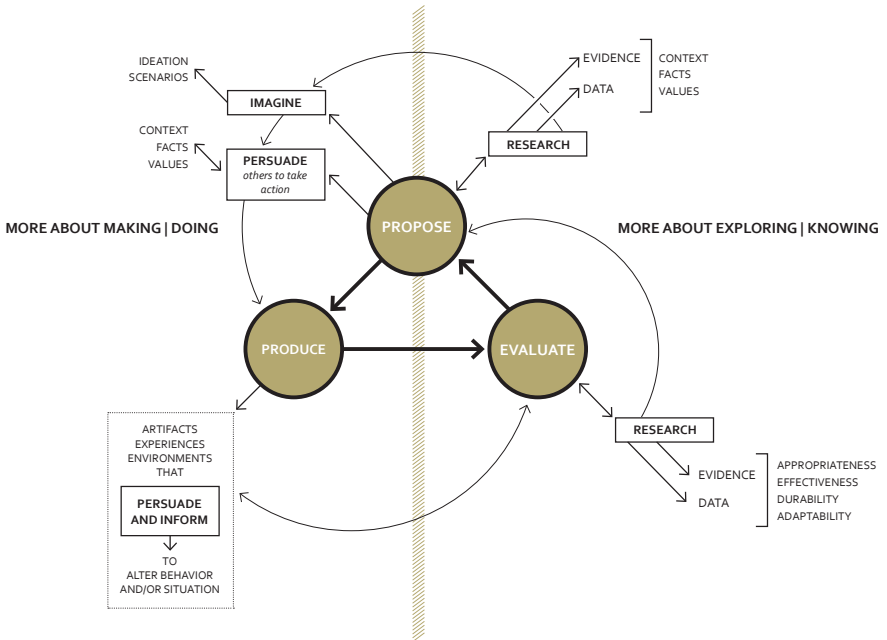
Figure 1: Investigative framework informing the workshop.

read and learn from our behavior and that allow us to collaborate to develop ideas and share power.[5]

HOW, AND WHY "WORKING FROM THE OUTSIDE IN..." WAS STRUCTURED

The three-hour span of time devoted to the facilitation of this workshop was subdivided into a brief 10-minute introduction (Examples, Figures 2 and 3), three 45-minute worksheets (Example, Figure 4), a 10-minute break, and a 25-minute concluding individual and/or group report out session. This configuration allowed for context setting, a "working-through" component, and time for individual and group reflection. This three-part learning structure was selected based on our past experience with its efficacy and potential for sparking thoughtfulness and insightful discussion. In order to ground or seed the experience, participants were strongly encouraged to bring information into the workshop that was

pertinent to a research project or agenda they either were already working on or wanted to explore. Participants were asked to briefly articulate and qualify:

- why whatever it is they were investigating/examining was significant, in terms of what types of knowledge or understandings it could possibly enable or yield, and why people inside and outside the world of design might be interested in and derive benefit from their research;

- with regard to research methodologies or methods, why they have decided to design their research endeavor (or were thinking about doing this) as they had; and

- what types of broader impacts and affects whatever they were investigating/examining could or might have (e.g., how something is thought about or made or distributed; how a procedure or making process is planned and operationalized; how the knowledge that is created could possibly change understandings or perceptions of a given set of circumstances or situations).

Each 45-minute module allowed groups of four to five to engage in a dynamic, diagrammatic-mapping processes orchestrated by the facilitators. These modules were designed to provide participants with a conceptual scaffolding and/or contextual framework that could help them identify key relationships informing their research endeavors. During each module, group participants were tasked with locating their respective research endeavors (paradigmatically, theoretically, methodologically, potential impact[s], etc.) relative to one of the three possible approaches to design research phenomena. At the completion of all three modules, individuals could, for the purposes of this workshop, situate and locate their particular research endeavors—within, alongside, outside, or elsewhere—in relation to all three approaches. Even if their particular research agenda was not closely aligned with one or more of the three approaches, participants were encouraged to think of their engagements in and contributions to each module as a means to gain familiarity with a new type of research framing and initiation toolkit or with a new research project identification platform.

POTENTIAL KNOWLEDGE OUTCOMES

The objective of having participants engage in the activities that comprised each of the three modules was to help them consider and make informed choices about:

1) where their current research is or could be situated with regard to the extant scholarship/research endeavors of others;

2) what factors, conditions, actors, and issues6 they should account for in the design of their research and why;

3) what specific paradigmatic and/or theoretical frameworks could or should inform their specific research endeavors;

4) what particular, method-based, or situational variables they should consider/weigh carefully, and which should they ignore;

5) which methodology and method(s) are most appropriate to guide the progress of their particular research endeavor so that the data-cum-information it yields is useful and usable;

6) how best to articulate realistic expectations that should or should not guide the generalizability of their research endeavor; and

7) how to most effectively make use of secondary research as either a scaffolding upon which to construct knowledge or an opportunity to identify where "holes" exist in current knowledge.

Figure 2: Sample page from introductory presentation.

Sociology › human social order › macro groups

Cultural Anthropology › human culture › meso groups

Disciplines principally organize and distinguish themselves in part by virtue of their claimed and settled subject of study (domain) and basic unit of measure

Biology › life and living organisms › hierarchal groupings

Physics › matter & motion, space and time › very large or small objects

Variety of investigative topics, but all located within core domain boundaries.
"We study this, not that".

Figure 3: Sample page from introductory presentation.

E

Paradigm › Theory › Model

Critical Theoretical Paradigm › employs dialogic methods combining observation and interviewing with approaches that foster conversation and reflection.

Interpretivist Paradigm › theoretical belief that reality is socially constructed. Thus, validity or truth cannot be grounded in an objective reality. › **Constructivism › Learning Model**

Feminist Paradigm › research on and for women in order to emancipate them and improve their lives by elucidating bias and inequity.

Positivist Paradigm › theoretical belief that there is an objective reality that can be known to the researcher, if they correctly apply proper methods.

Methodology › Methods

A methodology offers the theoretical underpinning for understanding which method, set of methods, or best practices can be applied to a specific case, for example, to calculate a specific result.

Quantitative Methods

Qualitative Methods › Directed Interviews

Abductive Inference

DESIGN DESIGNING DESIGNER

How considered › Analytical framework

Text Summaries and Analyses
Word frequency (lists of words and their frequencies)
Collocation (words commonly appearing near each other)
Concordance (the contexts of a given word or set of words)
N-grams (common two-, three-, etc.· word phrases)
Entity recognition (identifying names, places, time periods, etc.)
Dictionary tagging (locating a specific set of words in the texts)

Some High-level Goals for Text Analysis

Emic (subject) perspectives on topic
Document categorization
Language use over time

What 'counts' › How counted › Data

A recorded conversation
Field notes
A videotaped conversation
A directed real time essay

Figure 4: Sample worksheet model showing potential mapping outcomes.

The workshop culminated with an opportunity for individual participants and/or groups to synoptically report their findings to the entire gathering. This process allowed individuals to "short report" key findings about where and why they have located potential or ongoing research endeavors as they have as their participation in the workshop progressed. Providing the opportunity to synopsize and discuss findings, this component of the workshop encouraged participants to identify context, significance, methodological approaches, and, just as important, gaps or flaws in approaches, data collection, and analyses.

Brief Post-workshop Observations/Reflections

1) While many workshop participants attended with a clear understanding of their respective research agendas or trajectories, an equal number came to the event unsure of very basic but fundamentally critical research concerns. Examples include whether they should undertake some type of research based on their particular interests and/or mandates from their educational institutions; how their interests might coalesce around a concrete research agenda or frame a particular research trajectory; how could they decide what theoretical and/or methodological approaches might be the most efficacious for their needs; what resources might be available to early stage researchers.

2) This lack of working knowledge among many design educators about the general nature of research and its traditional structures and working models—however accomplished they may be in their classrooms or studios—reinforces what the workshop facilitators have experienced at past AIGA educator conferences. That being many design educators working at tier 1, tier 2, and other research universities and institutions do not necessarily possess the appropriate knowledge and skills necessary for them to easily pivot toward more research- rather than practice-based approaches and sensibilities.

3) As time progressed, the workshop discussion organically moved away from particular research "situating" and contextualization and toward a more expansive discussion about the changing nature of what constitutes research and/or scholarship for design educators. More than one participant expressed a

growing sense of unease with being asked by their respective institutions to undertake investigative activities more aligned with traditional academic expectations—including the need to publish or secure grants—rather than more familiar practice- or studio-based approaches to design education.

4) Participants indicated that for the most part what useful knowledge they left with was informed principally by their expectations. Those seeking to situate or evaluate their established or nascent research endeavors found completing the worksheets valuable. Those seeking to understand and come to grips with the broader nature of research and its increasing impact on design education found the more free-form discussion on the topic useful as well.

5) AIGA should continue to offer and promote these types of hands-on research workshops at future educator conferences. Design educators will increasingly require the types of knowledge outcomes and habits of mind these events can and do yield.

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We Are Not Alone: Navigating Design Research and Writing Challenges with Group Support

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Keywords
design research, writing practice, research support, accountability,
writing groups, writing logs

TOPIC DESCRIPTION

For design educators in higher education—who are primarily
trained as creatives—the emergent nature of design research,
paired with the lack of (or limited) training in academic writing
and research methods, makes the actual practice of design
research difficult. Despite these challenges, utilizing institutional
resources and establishing support networks with other
academics can provide the necessary support for overcoming
barriers. Our conversation dissected the challenges of scholarly
practice for design educators through sharing our collective
experience participating in a virtual writing group over the fall
2017 to spring 2018 academic year.

Due to the collaborative nature of design, design faculty often
engage in multidisciplinary research and writing and turn
to research methods employed in the humanities and social
sciences. Terminal MFA and MDes programs are increasingly
cross-listing research methods courses from other disciplines or
developing their own; however, specialization in design research
is not broadly available and the subject area varies widely in
content and approach from program to program. Because of

this, there may be specific standards and processes inherent to academic publishing to which design educators may not have been exposed in their education. As a result, design educators entering teaching positions in higher ed with research requirements must become practitioners while simultaneously learning investigative methods and procedures.

Additionally, the limited number of academic journals within the design field impedes options for dissemination of ideas and adds to the basic challenges of conducting research without early training in qualitative and quantitative research methods. The minimal number of journals subsequently increases competition for publication, pitting newer and less experienced researchers against scholarly writers who have received PhDs. With a potential lack of training, design educators engaged in scholarly research are largely left to their own devices when developing research trajectories. The expectation that individuals independently pursue publication—which includes determining the highest-caliber and best-matched journals for research topics—stands in contrast to examples modeled by faculty in other academic fields. Complicating matters even further, senior design faculty who have earned tenure based on creative activities and endeavors, such as exhibitions and design awards, may only be able to provide limited mentorship to junior faculty pursuing academic writing.

Efforts by the AIGA Design Educators Community and the College Art Association to establish standards that speak to the evolving, multidisciplinary nature of design—as well as translate it for the benefit of other disciplines—have played an important role. Academic institutions are expanding their definition of scholarly research for faculty in creative fields, benefitting design educators by encompassing a wider spectrum of scholarly and creative trajectories. Yet narrower avenues to disseminate the work remain. And though some departments may have guidelines for tenure and promotion that include scholarly publication in the field of design, how departments recognize or weight scholarly artifacts specifically for design varies from institution to institution.

Although the scholarship of design research may be less established compared to the humanities or social sciences, design

Figure 1: Participant responses to the question, "What are the writing obstacles you've been facing?"

educators in higher ed share similar challenges when pursuing self-directed work and balancing service, teaching, and research requirements. In addition to discussing the obstacles that can hinder progress in pursuing academic publishing, our conversation topic addressed solutions for developing structure and support. Our panel shared the experience and benefits of engaging in a weekly virtual writing group—comprised of design academics from both large and small institutions—which jumpstarted productivity and established accountability. From utilizing Wendy Laura Belcher's book How to Write Your Journal Article in 12 Weeks to shared writing logs and research plans, we created a strong support network that fosters personal accountability and has become a place to share updates, get feedback, and incubate ideas.

In addition to sharing a number of valuable resources, activities, and insights from our own experience, we invited attendees to share their thoughts through a Post-it note response activity and verbal discussion. The major themes that arose from this activity were issues with time, motivation, insecurities/self-doubt, and resources. Through conversation, we found that resources and institutional support can potentially be the foundational pieces

that help address issues around time, motivation, and insecurities. We also collected responses about participants' level of expertise and comfort with academic writing as well as requirements from institution to institution and sent a follow-up survey. Findings from this data will be disseminated in future research.

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IBM Incubator: Teaching, Doing, and Disseminating Design Research

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Senior Design Lead at IBM

THE INCUBATOR PROGRAM AT IBM

Beginning in 2012, IBM began a massive reinvestment in design to drive the development of more user-centered products and services. During the next three and a half years, the number of designers at IBM grew from around 200 to 1,600. Two-thirds of the new hires came directly from universities. A new hire training program was conceived to enable these early professionals and to equip them for success in a very complex company.[1]

Design research is a fundamental piece of the success story for IBM's transformation toward becoming a more design-led company. Relevant to the 2018 Decipher conference theme, the IBM Incubator— an essential capstone project within the new hire training program (IBM Design Bootcamp) for designers and product managers— drives the teaching, doing, and dissemination of design research at scale for IBM. Infused with fresh research insights, teams are able to reframe the complex problems they are given and deliver empathetic, compelling, and sometimes surprising outcomes for project sponsors.

At IBM, "Playbacks" are presentations for stakeholders with a focus on the user. They are an important point of alignment for teams.[2] Each Incubator project concludes with a Playback that delivers a user-centered story, business case, and a prototype. The associated deliverables are considered a handoff, where the Incubator project concludes and the sponsoring team work begins making the vision a reality with more robust engineering teams at their disposal.

The IBM Incubator should be of interest to design educators who want to take an active role in evolving their curriculum to meet the

Figure 1: The first class of new hire designers entering IBM Designcamp, 2013. The program would later be renamed IBM Design Bootcamp.

Figure 2: A design team working in the Austin Studio, 2017.

demands of a changing industry. Central to the success of the IBM Incubator model are these key concepts:

1) Radical collaboration: teams of diverse individuals from design, business, and technology backgrounds are essential for driving innovation on complex problems.

2) Beginners' mindset: the lack of experience designers have in a particular domain is an advantage rather than an inhibitor to success because it helps teams examine the problem in a new way.

3) Fresh design research insights derived from primary user research often fuel a critical pivot in the project, enabling the team to reframe the problem and deliver a compelling and successful outcome.

The Incubator provides an experience for early professionals that exemplifies the "complexity" and "resilient organizations" trends as described in "AIGA Designer 2025: Why Design Education Should Pay Attention to Trends."[3] Complexity is found in both the technical and industrial domains in which projects are situated. For example, sponsored projects may include technologies such as cloud computing, blockchain, data analytics, security, artificial intelligence, and quantum computing. They might touch industries including healthcare, logistics, finance, education, government, energy, and retail. The combination might look like "leveraging blockchain technology in the transportation industry" or "predictive analytics to mitigate global disease outbreaks."

By challenging new hires with these deeply complex problems, IBM is investing in a massive transformation ("resilient organizations") for both IBM and their clients' businesses. The Incubator projects challenge new hires to define and design the path the company should take through its products by envisioning "Version X," or the ideal user experience. This might mean a pivot for an existing product, which challenges assumptions that the sponsoring team held going in. Another layer of complexity is the challenge of communicating these new ideas successfully to project sponsors.

TEACHING DESIGN RESEARCH

IBMers are always challenged to think at scale. The scale imperative drove the development of Enterprise Design Thinking and the practices that define it. For design researchers, this means a codified set of resources at their fingertips that are essential to their success.[4]

Program leaders consistently observe that the skills, abilities, and experience of design researchers entering IBM are more unpredictable and varied compared to their colleagues from other disciplines such as user experience and visual design. Getting design researchers up to speed on the methodologies contained in IBM's way of working is an essential component of enabling them for success.

DECIPHER
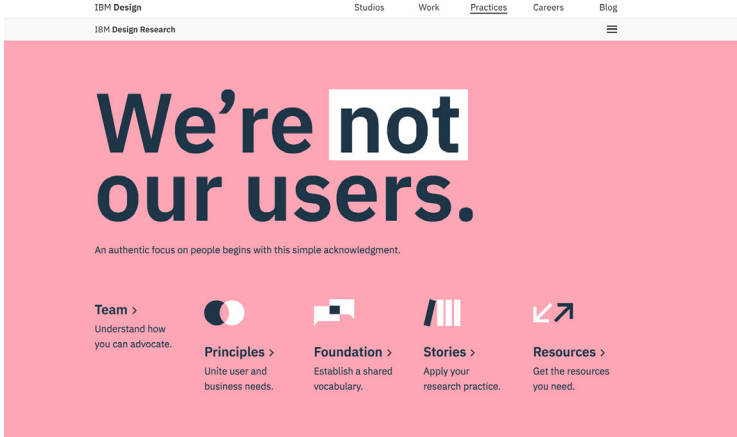
*Figure 3: IBM Design Research Website (*www.ibm.com/design/research*), 2018.*

Another way new hires get up to speed is through talks and workshops delivered by more experienced staff during the bootcamp experience. The visibility and access to experienced staff help new hires build their internal networks and know whom to reach out to for mentorship and guidance on their projects.

DOING DESIGN RESEARCH

The Incubator project is the new-hire designers' first opportunity to put their learnings into practice—with real accountability for the outcome. Design researchers manage the relationship with external users for the duration of the project. They typically lead the interview sessions with users and take on the responsibility of synthesizing insights from a number of touchpoints with multiple users. Deep understanding gained in the process drives the development of empathy for the user, a desire to solve the pain points they discover, and ultimately arrive at a differentiated vision for the product.

Incubator leads urge teams to engage users in design thinking activities to include them in the design process. This activity is consistent with the contemporary idea that creating "authentic user experiences in this technology-driven world requires working *with* rather than *for* people".[5]

Figure 4: Experienced IBM design researcher Rebecca Knowe delivering a workshop for new hires on systems thinking and complexity.

The following case studies from the Incubator—three projects out of roughly one hundred that have been executed to date—will highlight the role of design research as fundamental to a successful outcome. Each will also validate the assertion that the trends of complexity and resilient organizations are very real at IBM and that to prepare them for success, early professional designers need to engage in more experiences like these before entering the workforce.

PROJECT "OPTIMUS"—TRANSFORMING THE TRUCKING INDUSTRY

The founder and CEO of a startup called "Truck Trust" came to the IBM Incubator with a mission to transform an industry wrought with mistrust and pain points throughout the entire logistics chain. His company had invested in an IBM mainframe server, and his vision included the use of blockchain technology to create a secure and transparent platform that, once adopted, will have the power to improve the jobs and lives of the many different workers including brokers, dispatchers, and the truck drivers themselves.

In this short four-week project, the team immersed themselves in an industry completely unknown to any of them beforehand. The sponsor was very hands-on with the team and spent days

communicating his deep knowledge and introducing the team to external users. The team reflected their understanding of the broken process in a very clear story of what the logistic ecosystem looks like today and at the end demonstrated through a clickable prototype how their design would work to solve pain points for a variety of users.

As of this writing, Truck Trust is invested in moving forward with an IBM blockchain solution that has the potential to transform an entire industry. Design thinking and user-centered influence on this project were key to this success.[6]

PROJECT "ERLENMEYER"—COGNITIVE SEARCH PLATFORM FOR MATERIAL SCIENCE RESEARCH

IBM project sponsors came to the Incubator with a foundational technology in hand and a hypothesis that their cognitive engine could be a very powerful tool to assist scientific researchers with their work. What they didn't have was the capability within their own team of developers to conceive of a user experience that would bring it together in an elegant and delightful way. That is what the Erlenmeyer team did in 11 weeks.

With the goal to "Streamline Chemical Researchers' efforts to develop new compounds for inorganic chemical manufacturing and
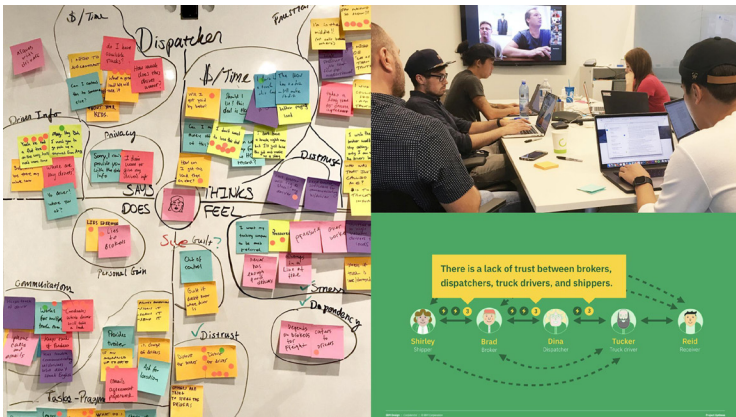
Figure 5: Left: Empathy map for "Dina the Dispatcher" persona. Top right: Incubator project team interviewing users from a trucking logistics company. Bottom right: Artifact from a deck demonstrating relationships in user ecosystem.
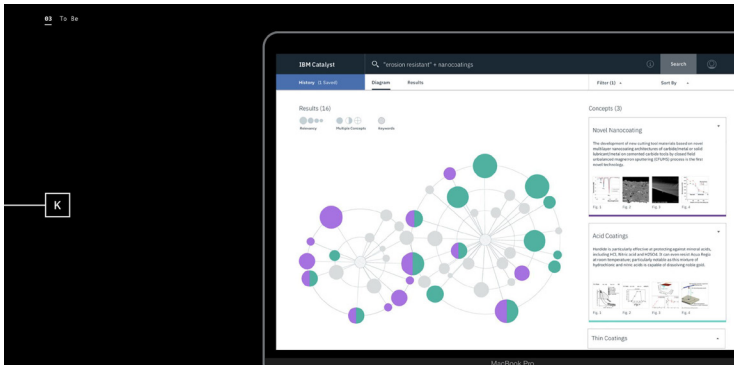
Figure 6: Visual user interface prototype for project Erlenmeyer.

material science," they were set off on their mission. The team conducted eight co-creation sessions with six users to deeply immerse themselves in discovery. They made sense of a deeply complex domain, an advanced existing AI technology, and the culture of a user that was largely unfamiliar to any of them.

The story that the team brought to life through their project included an ecosystem of personas known as Kelvin the researcher, his colleague Fahren, their research director Dr. Bonds, Devin the simulation engineer, and the resident data scientist Big Dada. The team highlighted key pain points for the professional scientific community: researchers are limited by traditional input/output search systems limiting hypothesis exploration; simple keyword searches are superficial and time-consuming; and there is a lack of visibility into previous research efforts within the same organization making redundant work all too common.

As a project with a longer duration, this team was able to conduct both formative and evaluative research, iterate numerous times on their prototype, and deliver a highly successful outcome for their sponsors. The project received so much positive attention that a small subset of the team (including the design researcher) was brought to IBM corporate headquarters in January of 2018 to deliver a condensed version of their Playback to IBM's CEO and her Technology Team—including the top Vice Presidents in the company. The outcome of that meeting was a resounding vote of confidence for design as a driver of an excellent user experience.

CASE STUDY: PROJECT "MONOCLE"—POWER SYSTEMS

Power Systems is one of IBM's core legacy businesses. The end users of the technology are information technology systems administrators and managers who oversee massive server facilities. The sponsoring team came to the Incubator with a prescriptive solution: the design team should create a "single-click update" for these users. After 30 interviews with users that told a completely different story about what they needed, the problem was completely reframed. In reality, the idea of a "single-click" update was terrifying to an administrator who is responsible for managing systems at this scale. What they want is control, visibility, and confidence when performing updates to their systems.

The team was able to design and prototype a new experience based on real design research insights, leading to a completely different outcome than the sponsor expected. Carl Burnett, a Distinguished Engineer in the IBM Systems development group who was initially skeptical of the design process—and an advocate for the single-click update—said this at the end of the project:

"Engaging our stakeholders at the beginning instead of the end allowed us to get at the true pain points. You could feel the emotion from these users coming off the comments and quotes. It was really powerful" (IBM internal documentation, 2017).

Project Monocle is a perfect example of how user research can change the course of a project by determining what the user *actually* needs, not what people *assume* they need. It also demonstrates the business value of design and design research.

ADDRESSING ANTIPATTERNS

Experience running dozens of Incubator projects taught program leaders the necessary ingredients for success. An important skill program that leaders developed was how to source, vet, and evaluate projects and sponsoring teams. The program is obligated to drive great outcomes for the business *and* great experiences for participants.

However, out of the dozens of Incubator projects seen start to finish, some inevitably turn out less than ideal. For example, instead of "Version X"—or the ideal blue-sky vision—the team presents
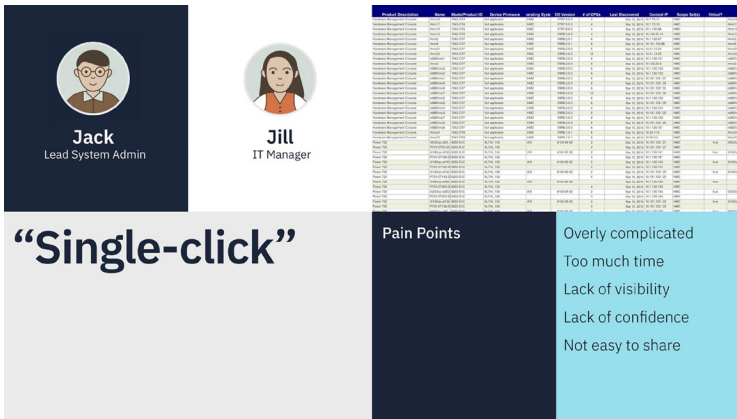
Figure 7: Montage representing user personas, their pain points in the current paradigm, and the misguided solution suggested by the sponsoring team for an update that could be applied to a mainframe server environment using a "single-click."

a "Version Next." This can happen when the team avoids risk-taking. For example, the project team may allow themselves to be heavily influenced by sponsors who don't understand the aim of the program. In this case, the sponsors might be more interested in the program as a design resource to accomplish their near-term goals than envisioning a more innovative experience.

Many times, the project team does all the right things and presents a compelling "Version X" story that is met with praise from their sponsors. The disappointment happens when upon follow-up, program leaders find that no action is being taken to implement the vision.

Occasionally a major pivot very late in the process makes it difficult for the team to achieve newly framed goals. They may not have access to the right users, and no time is left for them to act. This is sometimes indicative of what is called a "stop the bus" outcome, meaning the original user identified was very far off-base from what user research indicates is the case. It can be uncomfortable, and less than ideal for the project team, but is not ultimately considered a failure because knowing what not to pour resources into is equally as important as the reverse. The important antipattern to address in this case is a more careful framing by the project sponsors going in.

IMPACTS OF DESIGN RESEARCH

Knowledge transfer for Incubator projects takes place weekly throughout the project in order for the team to highlight key findings and get feedback from their sponsors on the work. At the conclusion of the project, the Final Playback tells the full story, end to end, including a demo of the design solution or prototype. At this milestone Playback, powerful insights are often delivered in the form of direct quotes from users. Whether they express a pain point with an existing product or a desire for what would make their jobs easier, executive stakeholders perk up when they hear directly from the mouths of their users. This groundwork provides the necessary buy-in for stakeholders to embrace a radical design departure from where their product might be currently.

Another way to think of the impacts of design research is via its dissemination through the corporate culture. As IBM makes its transformation toward a "sustainable culture of design and design thinking," the influx of early-career designers (and design researchers) will be a key ingredient. As they are deployed from bootcamp into the company, the experiences, ideas, and skills gained there go with them.

The IBM Incubator is making a direct contribution to transforming IBM as a company. For any business, *business results* are where value is placed. Without them, design and design thinking are unimportant. Continuing to demonstrate the contribution of design in achieving business results is critical, and IBM is making progress in that regard.

A 2018 study on the impact of IBM's design thinking practice concluded that "Organizations slashed the time required for initial design and alignment by 75%," and "Project teams leveraged better designs and user understanding to reduce development and testing time by 33%."[7] This is good news for IBM and for the academic community who want to see growth in employment opportunities for their students upon graduation.

ACADEMIA AND INDUSTRY

The IBM Design Bootcamp program and the Incubator was put in place to close an observable skills gap that design leaders saw

among early professionals during the first years of the program, however much still needs to be done.[8]

A recent internal assessment of 45 global studios by IBM design leadership concluded that significant skills gaps remain for early professional designers entering IBM today including collaborating with other disciplines (business, engineering), working with teams, and experience with real users and clients. This means intensive new hire programs are still very much needed for designers to achieve success when they are placed in positions throughout the company (IBM internal documentation, 2018).

What about early professionals that are entering roles in the industry that are not provided an intensive onboarding like the experience offered at IBM? Academic and design industry communities each have a stake in early professionals' success and therefore might consider the following questions for discussion.

How might our communities help close the skills gap *before* students enter the workforce? How might we:

1) Provide more experience for students on complex problems?

2) Enable them to embrace complexity and use it to their advantage?

3) Break down or remove barriers in our organizations to enable more radical collaboration? What are three big ideas to try?

4) Work across academia and industry to run more business-sponsored projects in classrooms?

SESSION OUTCOMES

Recap

This session presented the contents of this paper with the use of a slide presentation. Greater details about the program structure were presented, as well as the three case studies outlined in this paper. This drove the assertion that early career multidisciplinary teams can have great influence over the trajectory and outcome of high-profile projects **when all the right project criteria and the high-touch support systems are in place.**

How might we...   5min

| Provide more experience for students on complex problems? | Enable them to embrace complexity, and use it to their advantage? | Break down or remove barriers in our orgs to enable more radical collaboration?

What are three big ideas to try? | Work across academia and industry to run more business-sponsored projects in classrooms? |

Figure 8: Slide from talk to provide prompts for conversation among session participants.

Discuss and cluster   10 min

Did themes emerge?

Group similar responses

Label each cluster

Figure 9: Slide from talk used as the prompt for small groups to discuss their responses and cluster them thematically. This is a common practice used in Enterprise Design Thinking to surface patterns across research or brainstorming artifacts.

Conversation

The session then shifted to an interactive/conversation format. The first step invited participants to formulate their own responses to these questions/prompts individually for five minutes. Next, participants were invited to discuss and cluster responses, moving similar items closer together, identifying themes and patterns across their thinking. As a last step, small groups were paired to play the themes back to one another and continue the dialogue.

Figure 10: Photo from session including a small group of design educators in discussion, sharing their responses with another group.

POST-SESSION SYNTHESIS

After the session, the author synthesized the raw data for coherence to create an **ecosystem of needs** and **actionable insights** for the design education and industry communities.

Ecosystem of Needs

First, let's consider the needs of the primary user groups. The ecosystem map helps us see the key relationships and dependencies between each as well as elements that should be in place to run a successful program. This representation should be considered a non-exhaustive, high-level view. Some additional dependencies may exist other than those depicted.

Businesses need

- Valuable outcomes that provide return on investment of time and effort from staff
- Professional development for emerging leaders
- A pipeline of high-quality recruits for internships and full-time jobs

Students need

- Experience on **real** complex business problems **with users** that lead to portfolio outcomes
- Access to resources and mentors from the business
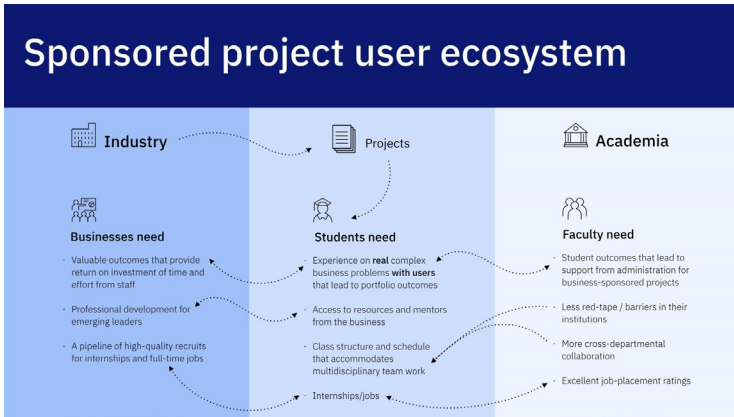
Figure 11: Visual depiction of user ecosystem (created by author).

- Class structure and schedule that accommodates multidisciplinary team work
- Internships/jobs

Faculty need

- Student outcomes that lead to support from administration for business-sponsored projects
- Less red-tape/barriers in their institutions
- More cross-departmental collaboration
- Excellent job placement ratings

Actionable Insights

Theme: Providing more experience for students on complex problems and helping them use complexity to their advantage

Throwing early undergraduate design students on a sponsored project into an unknown industry involving a complex technical domain probably goes against most educators' best instincts. This is however what many early professionals will be asked to do immediately upon landing their first job. Although their experiences will differ depending on the employer, industry, and precise role, if they are headed into the user experience or service design fields involving technology, the majority of them will be confronted with systemic complexity that can feel overwhelming and difficult to

unpack. They will also be expected to work on multidisciplinary teams including individuals from business and engineering files. If early professionals are not adept at group collaboration, their ability to add value quickly on a new team can be reduced. Educators must be keenly aware of the trend toward complexity of problems and multidisciplinary teamwork and build students' capacities for handling all of it.

Actionable insight #1: Build students' capacity for complexity

Early in their undergraduate experience faculty might consider starting with the familiar. Have students look for complexity in their everyday lives to build capacity. For example, participants said:

- "Find student passion and have them immerse themselves in the complexity"
- "Ground the experience in the students' own culture knowledgebase"
- "Ask them to solve a problem that affects them directly"

Actionable insight #2: Break down complexity

Breaking large-scope problems into pieces for easier tackling and consumption—and focusing on which problems to solve—emerged as a theme. This is a critical skill for students to gain. In the industry we increasingly rely on product teams to discern what is "out of scope," to ensure they aren't trying to take on too much in the time frame allotted, or become unfocused, overwhelmed, or distracted from the essence of the problem. Workshop participants said:
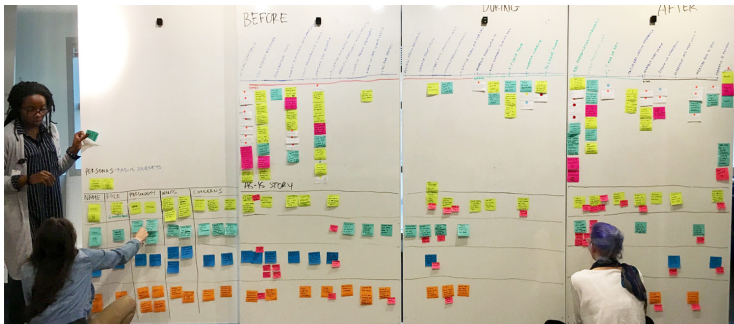
Figure 12: A team of IBM interns work on a Scenario Map to unpack service design problems found in an IBM executive briefing experience.

- "Break down large-scale problems into workable, less intimidating challenges to workshop through."
- "Narrow down to the key problems to solve."

Enterprise Design Thinking Practice leaders observe that by breaking complex problems into steps or smaller pieces can help teams see more specifically where pain points exist and identify the biggest opportunities for an innovative solution. It may also bring to light gaps in their research and what more they need to investigate.

Theme: Removing barriers, enabling more radical collaboration, working across academia and industry

Overwhelmingly, responses pointed to the desire of educators to have increased multidisciplinary collaboration with people from other disciplines and departments within their educational institution and from outside academia.

Actionable insight # 1: Start with personal relationships

Many responses indicated that building cross-departmental relationships within one's own academic institution through simple socializing and networking were an important first step in breaking down real or perceived barriers. This might include creating and hosting cross-departmental social events, lunch-and-learn sessions, or workshops with one another.

This informal model can apply to the relationship between faculty and industry professionals as well. Beginning with personal relationships quickly helps us see shared goals that can be acted on together. For full-time faculty, this might mean attending more industry-related events to build a network of colleagues that can be tapped for studio tours, guest critiques, and specific mentorship opportunities for their students.

*Actionable insight #2: Embrace multidisciplinary teams for faculty **and** students*

More experience with multidisciplinary teamwork is essential for all college students today. In order to intermix students, faculty need to intermix themselves too. Informal cross-pollination of classes is a logical next step for faculty that does not require major programmatic overhaul. For example, bringing a group of

business and design students together for a relevant workshop on a project or topic in an existing class would encourage design students to think more about the business implications of their work, and business students would be inspired to think more about the desirability and usability factors behind a product offering. Add a computer science class and instructor to the mix and the possibilities for learning via diversity of thought become more and more a reflection of what is happening in the industry today. More robust and programmatic responses included:

- "Create more interdisciplinary classes that mix business, engineering, and design."
- "Run participatory design with multidisciplinary teams, develop research outputs that students can use."
- "Find content experts in other departments."
- "Define clear ways to share resources: calendars, facilities, money, etc."

This may mean that incentives to collaborate with one another need to be created at the administrative level, along with appropriate support structures to assist. That might look like increased recognition of, or higher compensation for, courses developed and run by cross-departmental faculty.

*Actionable insight #3: Use **real problems** and provide **real users***

Design educators want compelling projects for their students. Prospective employers want students with some professional experience. Many responses from educators indicated that industry-sponsored projects with real users are desirable and meet many learning objectives. Responses were not surprising:

- [Use] "Real clients, real problems"
- "Convene cohorts of end users for design research"
- "Partner with business to tackle an actual problem"

Individual instructors without the support structures in place from their academic institution can execute sponsored projects in their own classrooms. However, getting buy-in and support from administration to scale a program is a critical step in the direction

of academia responding to a changing industry as the new standard. "Big ideas" included:

- "Create an 'innovation' program where silos can meet."
- "Establish a course that is consistently collaborative regardless of instructor."
- "Require university design programs to incorporate the sponsored projects into the curriculum (grad requirements)."

Session Outcomes Conclusion

Responses from the session overwhelmingly indicate an appetite among faculty to collaborate more with one another across departments and more with industry professionals. When we examine the ecosystem of needs across groups (students, faculty, businesses), it is clear that each can be satisfied by working more closely together as the new standard.

The workshop session participants had a very limited amount of time to dig into their prompts, so the data should be considered high level. More work should be done to understand blockers, barriers, or pain points that faculty face in order to put into practice the desired collaborations they suggest.

CASE STUDY: IBM & UT

There are many new academic programs that are embracing industry partnerships to help prepare their students for more challenging jobs. One example is the partnership between the University of Texas at Austin and IBM. UT began offering the course Advanced Design Thinking in the fall of 2017, taught by Brooks Protzmann, a design director at IBM. This highly competitive acceptance-only class takes on 24 students (with 100 wait-listed) from diverse programs such as psychology, computer science, engineering, business communications, design, and even performing arts. They collaborate on a real problem sponsored by an IBM business using Enterprise Design Thinking and leverage the model of the Incubator program. The fall 2018 semester produced results that were noted by the instructor and project sponsors as having real business value for IBM and as the best results they have seen to date for student learning outcomes.

In an interview post-Playback, Protzmann said about the students: "They have a hypothesis... they think: 'we're going to build a travel bot for *everybody*,' and then they find out 'well, that's not really a problem for *everybody*. It's a problem for business people. So let's focus on business people.' The research showed them the [original] hypothesis was wrong."

Jules Murphy, practicing UX designer at IBM and teaching assistant for the class, led a project centered around designing a better way for managers to recognize their employees' accomplishments. She said "My team was able to recognize *apathy* as a problem. This shows a really high level of cognitive function on their part. It's really easy to glaze over that." In order to discover this, they had to talk to numerous users, identify it as a pattern, and tell their stakeholder that. Murphy pointed out an essential learning experience among her students that is consistent with design education thought leaders as a critical skill to cultivate for their future success: "The designer's role is often advocating for the user and building agreement among stakeholders, not deciding."[9]

Primary user research helps them identify the real problems and present a creative response. Perhaps more important, by intersecting with industry stakeholders, the students gain experience in effective communication of their findings to people who are very far beyond them in years of experience and authority.

When asked what drove the successes from the semester, Protzmann cited the availability of the following as essential ingredients:

1) A real, complex business problem

2) Access to real users

3) Dedicated IBM stakeholders

4) Support from UT leadership (Doreen Lorenzo, Assistant Dean, School of Design and Creative Technologies at UT and her team).

5) IBM-managed logistics for students (example: bus transportation between campus and the IBM studio once weekly)

6) Internal teaching assistants at IBM who lead individual projects, helping students gain access to internal resources and people throughout the project

Students were all granted the Enterprise Design Thinking "Co-Creator" digital credential at their final Playback as an acknowledgment that they met the badge criteria of having experience with: 1) collaborating in teams to understand user needs; 2) presenting findings and ideas to various audiences; and 3) creating sketches and storyboards to explain thinking.[10]

CONCLUSION

The Incubator model provides an effective framework for advanced project work during students' academic experience and "fills the gap" for early professionals who join large, complex organizations. It can be useful as an approach, regardless of the size of the academic program so long as the list of "essential ingredients" is largely in place.

What if as a design educator you are not part of a large organization like UT? Is it possible to get those "essential ingredients" in place? How might faculty at smaller academic institutions with varying degrees of administrative support take some of these ideas to provide value for students and gain buy-in from administration leading to a more formal program and larger-scale approach? Furthermore, how do both businesses and academic institutions sustain programs as staff and faculty move on or out of their current roles?

These questions might serve as prompts for further exploration by faculty who understand both the limitations and possibilities within their institutions. These questions also require leadership of academic institutions to examine their missions. If student success is determined by healthy job placement rates in high-paying and/or high-satisfaction roles, creating sustainable industry partnerships centered on **real problems** with **real users** performed by multidisciplinary teams and supported by **dedicated sponsors** is a tried and true path forward.

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Expanding the Discourse: Future Practices in Scholarly Publishing

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What does the future of published scholarship look like? We explored this question through our conversation session at the Decipher conference with a group of approximately 20 design faculty, researchers, and professionals. The focus of this conversation involved looking at the historical, contemporary, and future role of design in scholarly journals and the role of scholarly publishing in design research.

Design research practices include a range of activities: archival research, interviews, data collection, visual analysis and observation, and exploratory/critical making. Publication and dissemination of these varied practices takes on many traditional and non-traditional formats: from peer-reviewed articles in academic journals to self-authored publications and experimental venues. The ways these practices are recognized by tenure review committees, peers, and by scholars in other disciplines informs the perceived value of those venues. This is worthy of discussion as design students (both undergraduate and graduate), faculty, and researchers explore and expand new avenues for understanding how design research can be disseminated across disciplines.

As scholarly production embraces the digital, new implications arise for the publication, interactivity, and reading experiences of academic research. Publication design, format, and authored content can influence the perceived identity of the research itself,

| 1814 | 1928 | 1985 | 2018 |

Figure 1: The visual evolution of The New England Journal of Medicine (www.nejm.org/).

the author, the journal or organization, and the publisher. Through digital publication, scholarship gains the features of keyword searches, citation, and annotation. These features can greatly improve access to published research, but analyses of academic journals—a form of design research itself—may provide more insight into their visual evolution, access, and prestige over time.

JOURNALS AS MATERIAL CULTURE: *THE NEW ENGLAND JOURNAL OF MEDICINE* AND FEMINIST PERIODICALS

As part of a broader research project, we (Barness and Papaelias) are investigating the role of visual design in the perceptions of authority and legitimacy of academic journals within a discipline. The following examples were presented during the Decipher conference session as a way to introduce some of our current research to the session participants. In these examples, we use design research methods in order to situate academic journals as the material culture of scholarship.

The New England Journal of Medicine (NEJM) works well to illustrate the visual evolution of an academic journal over time. First published in 1812, *NEJM*'s pages were printed with single-column texts and pagination. The name of the journal was prominently displayed top and center. Through the years, the shifts in appearance are minimal: moving from a one-column to two-column layout, increased white space, font choices, and advancements in publishing technologies, such as moving from print to digital formats (Figure 1). Overall, *NEJM* displays visual

Figure 2: Selections of contemporary academic journals in the library stacks (their natural environment!).

values that are often perceived as positive in an academic context: authoritative, trustworthy, and prestigious. This is an example of past functionality of a layout becoming a convention, regardless of whether or not the typographic treatments are still appropriate.[1]

Academic journals are generally categorized as periodicals, however, studying their design remains outside other established historical research of publishing practices. As physical objects, books are revered and collectible; newspapers and magazines are often broadly consumed and disposable with more public appeal through visually enticing design. Journals are produced by, and for, scholars as archives of knowledge and are considered currency within academic culture. Subscriptions and digital collections are often held by institutions rather than individuals, with an emphasis on the access to journal content in databases rather than the preservation of the physical object. Although innovations in digital publishing of scholarly journals do exist, there is limited analysis of their visual design. For these utilitarian academic objects, it is their "utter use*ful*ness"[2] that makes them worthy of design criticism and

research. A snapshot of various printed journals in the stacks of a university library demonstrates the graphic variety (or lack thereof) across disciplines (Figure 2). It becomes clear that some journals place more emphasis on cover design than others and that some journals may feel the need to maintain a traditional appearance (i.e., rigorously academic) whereas others make use of typography, color, or artwork in order to set themselves apart from the group.

Since 1981, the library at the University of Wisconsin–Madison has published Feminist Periodicals, an open access repository with quarterly collections of the table of contents of over 150 English language periodicals (both academic journals and popular magazines) focused on women and gender studies. Each issue provides an extensive visual landscape for investigating the typographic voices of a range of periodicals. Comparing the design of these tables of contents over time and across publications (Figure 3), we can analyze and understand the relationship between the visual conventions, publishing technologies, and the nature of current literature in a given subject, field, or discipline. As described on its website, the repository was "initially put together using scissors, glue, and a copier; it became a PDF format in 2008, and now ten years later, it has moved from a static, unsearchable format to an Omeka digital collections site."[3]

In the cases of both *NEJM* and Feminist Periodicals, it is the act of digitizing original artifacts (original article layouts and table of contents, respectively) that makes visual analysis possible. These digital archives are research tools. Through the development of a digital archive—inclusive of photographs, scans, and user
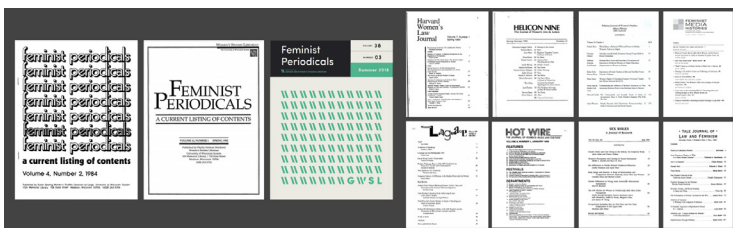
Figure 3: Covers and tables of contents from the Feminist Periodicals open access collection at the University of Wisconsin–Madison (www.library.wisc.edu/gwslibrarian/feminist-periodicals/, www.feministperiodicals.org/).
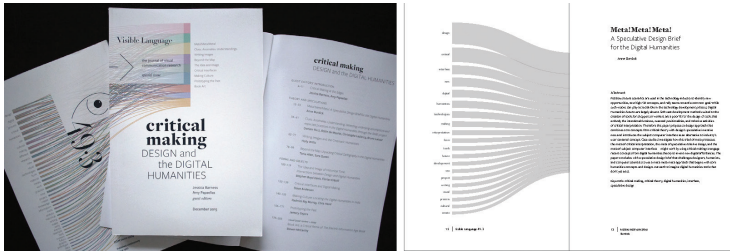
Figure 4. Printed cover and sample article spread from Visible Language special issue, "Critical Making: Design and the Digital Humanities"

experience within the interface itself— an institution's curators and designers preserve the visual social and cultural significance of the artifacts.[4] Inevitably, this shapes a viewer's perspective of those subjects and fields.

With these examples presented to the session participants, we then turned to our experiences as editors and designers of a scholarly journal within the design discipline.

DESIGNING SCHOLARLY PUBLISHING

As the co-editors and designers for the *Visible Language* special issue "Critical Making: Design and the Digital Humanities,"[5] we experienced problems of translation across digital platforms and research tools. *Visible Language* (www.visiblelanguagejournal.com/) is the oldest, continuously published academic design journal in the world. The journal has always placed importance on the overall design of its format: a traditionally printed and bound book. As co-editors for the special issue, we were given permission to design and format the printed publication as we saw fit for the content. Each article began with a text analysis data visualization on the left side of the spread, with the article title, author name(s), and text on the right side. Text, footnotes, and images were carefully handled to facilitate an appropriate reading experience (Figure 4). PDFs from the printed version were submitted to the library database EBSCO and are currently available for download there and via the *Visible Language* website. However, the *Visible Language* website and library database ProQuest also publish the articles

as hypertext. As a result, all layout decisions—including the text analysis visualizations that conceptually link the group of diverse articles—are lost.

New forms of scholarship require new forms of dissemination. Publications and platforms that have been pushing the boundaries of the academic publication standard include *The Electronic Book Review* (www.electronicbookreview.com/), *Kairos* (www.kairos.technorhetoric.net/), *Thresholds* (www.openthresholds.org/), and *Manifold* (www.manifold.umn.edu/). Nonetheless, there are some shortcomings; *Kairos*, for example, lacks a visual cohesiveness and opportunities for open dialogue, and *Electronic Book Review* focuses on long form, traditional essays with limited interactive content.

Design scholars and researchers have a role in the design and representation of knowledge. According to Anne Burdick and Holly Wills, it is critical for "practitioner-researchers and design thinking researchers to consider the role that design has to play in the generation and representation of knowledge."[6] Design research will continue to be an integral part of design practice and related fields, and yet the ways in which research is disseminated and interpreted is a vital component of its impact and value. Maintaining academic rigor while supporting radical and diverse perspectives and outcomes will inevitably help communicate the value of publishing design research and the design of published research. This example of our own experience with *Visible Language* provided session participants with some considerations for how we might collectively think more deeply about the production and dissemination of design research and scholarship.

DISCUSSION

We then posed the following questions to the session participants: In what ways does the templatization or customization of digitally interactive publications mediate our experiences? What kind of visual information is lost through aggregation within digital databases and what is gained? How might these questions surrounding digital scholarship impact access to and engagement with design research? Participants divided into smaller groups to discuss these questions and then reported back to the larger group in a final wrap-up session.

Session discussion on these topics yielded a variety of perspectives related to the role of design in scholarly publishing. Some participants observed that there are limitations of design journals' reach within a community of practitioners; publications such as *Emigre and Zed* are viewed as authoritative within the professional design community but are not necessarily considered scholarly journals by the academic design community or tenure committees. Additionally, participants noted that all journals are designed in some regard, though the quality of those design solutions is varied. There were also comments on normalizing the language of design as a discipline with a standardized lexicon for our scholarship. Although the discussion was limited by time, participants were most interested in thinking through the ways secondary design research—sifting through digital archives, publications, and collections—occurs in online environments.

One session participant, Tania Schlatter, was particularly interested in further exploring these ideas. The following is a speculative model for an open-access design research repository based on discussions during the session that addressed the question "What are our design research tool needs as scholars and practitioners?" We share her post-conference contribution below.

IMAGINING AN OPEN-ACCESS, DIGITAL REPOSITORY FOR DESIGN RESEARCH

TANIA SCHLATTER

The act of conducting primary design research varies from finding and analyzing historical artifacts, to creating and testing prototypes or models, to ethnographic research on people and environments to inform designed concepts and products. When conducting secondary design research online, session participants described the experience of conducting searches but not being sure of what they are looking for at first. The process of reviewing results helps define criteria. Curation of results matters and helps researchers determine which resources may be useful. Access to material is the goal, and good visual design is a bonus. Context also matters— for example, who the publisher is, and who the author is—as do metrics that describe influence, especially how colleagues or leaders rate the research.

What can be found readily online are scholarly articles published in journals, case studies published by magazines and bloggers, chapters in books, and artifacts in archives. There is a wide range of resources, some hard to access, some limited in usefulness due to the lack of curation and meaningful metrics.

Products of research are in the hands of researchers, educational institutions, public and privately held for-profit and not-for-profit organizations. Some organizations have digital repositories of designed artifacts, such as the AIGA and Cooper Hewitt. Articles that rely on design research are published in scholarly journals such as *Visible Language*, *Design Studies*, and *Dialectic*, professional magazines such as *Interactions, User Experience,* and *Communication Arts,* conference proceedings, such as ACM SIGCHI, and on blogs such as *Design Observer* and *UX Matters*.

Sometimes, even when design research articles are available online, the images that contain data—photos, charts, diagrams, etc.—are left out or included at such low resolution that they are inscrutable, leaving researchers and learners with an incomplete picture and an incomplete understanding of the research.[7]

Conducting design research as part of user experience design is common and becoming well understood with methods and practices that define the practice. Blogs and online journals that publish research methodology abound yet vary dramatically in the level of scholarship they reflect and promote. Articles on *Medium, Smashing Magazine,* and others are widely read and disseminated online. Due to their accessibility, these practical and non-scholarly articles are the common "face" of the profession.

Imagine a digital repository that design researchers and publishers add data to for archival and research practices. Can an easy-to-access design research repository augment efforts to yield useful research results? Can a well-structured design research repository facilitate the development of useful, generalizable theories and/or practices by sharing design research in a systematic way? I imagine an outcome of this effort, if successful, is a resource that will bridge the gap that exists between scholarly and practical, practitioner-based design research and writing. I hope it will make scholarly research more accessible and raise the level of practitioner-based research.

Benefits

Having a repository of design research data would bring curation, transparency, and accessibility to design research. Open access to a pool of research data will facilitate connections that lead to new knowledge, informing design practice and research. Having a taxonomy and system for archiving and describing design research products will facilitate understanding within and about the profession. The impact would extend beyond designers, design researchers, and design educators to organizations who rely on design research to further their work.

Key features

- the ability to deposit a variety of file types: pdf, video, various image types
- the ability to add metadata from a controlled vocabulary to facilitate finding, understanding, and archiving
- the ability to publish data, creating a persistent identifier that can be used to track and cite data, as well as give researchers credit for their work
- the ability to update or version to keep work up to date yet maintain the persistent ID
- The ability to share data with attribution, perhaps with creative commons (www.creativecommons.org/licenses/by/4.0/) or similar license
- The ability to create collections of data

Questions

- What design archives exist? What design research archives exist?
- What may be deposited? Who may deposit?
- What is not design research data?
- Who curates?
- How might a design research digital repository system facilitate the deposit of large volumes of research data?

CONCLUSION

An ongoing historiography of design's role in scholarly publication raises a number of topics for discussion on the future role of, and for, accessibility and the visual nature of design research. An open-access, digital repository—such as the one proposed above based on the conference session discussion in this paper—suggests that new tools are needed to address some of these perceived problems inherent in doing design research. The term *design research* itself includes a broad range of professional and scholarly practices, from evidence-based analysis to critical making. A recent article by Mike Zender positioning the color studies of Josef Albers as design research utilizes this common definition of research: a "systematic investigation that aims to produce generalizable knowledge."[8] While recognizing some of the differences between scientific and design research, Zender argues that "both design and general research hope to identify principles and knowledge that others can use."[9] What constitutes as evidence in design research may include criticism and cultural production, adding to the complexity of what is/isn't design research. Furthermore, there may be discrepancies between journals' visual character and content. In her recent study, Sharon Helmer Poggenpohl positions select design journals on a mat rix in the context of design as a cultural statement; there is a correlation between journals of "soft" content with "high" visual, and "hard" content with "low" visual.[10]

This paper asks more questions than it answers but addresses the need for an ongoing discourse. Further investigations and provocations into these areas will allow scholars and researchers to develop tools and environments that expand the impact of design research on practice, pedagogy, and scholarly publishing.

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User Experience Practitioner & Design Researcher Interaction

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Two goals for the Decipher conference were:

1) Connect emerging and experienced design researchers in academia and beyond

2) Create opportunities for dialogues that foster mentorship and collaborative connections

One way to accomplish these goals is to encourage interaction between teachers and researchers in academia with practitioners in industry.[1]

In general, partnering with colleagues in academia makes practitioners better at what they do by increasing their professional capabilities upon a theoretical foundation. Industry employers get access to talented employees (students) and access to knowledge (academic research).[2] Teachers can improve the relevancy of their courses, and researchers can find applications of their research.

Examples of collaboration in the user experience (UX) industry include[3,4]:

- Corporate clients for class projects
- Practitioners guest lecturing a class or teaching an entire course
- Practitioners serving on dissertation and curriculum committees
- Companies hire a vendor from academia (often based on their research expertise)
- Corporate-sponsored research projects, undirected and targeted
- Traditional technology transfer between academia and industry
- Practitioner in residence program

Specifically for design research, collaboration between academia and industry practice will advance design research by helping practitioners understand the theoretical foundations of design research and academics grasp the constraints of industry.

The first step in collaboration across academia and industry is getting people from both worlds to spend time together. Conferences are one venue. For Decipher, a specific call for UX practitioners was issued.[5] Next came a proposal for this session at Decipher where practitioners could meet the academics and discuss how to use the Decipher conference to plant some seeds for collaboration.

At the "UX Practitioner & Design Research" conversation at Decipher, we shared examples of, wishlist items for, and barriers to academia/research and industry/practice collaboration.

EXAMPLES

Examples of collaborations shared at the Decipher session were grouped later into four categories.

- Getting practitioners on campus. Practitioners teach classes and review portfolios. Companies sponsor and speak to student organizations.
- Getting professors in industry, as active practitioners.
- Example projects dealing with smart home technology, nutrition, machine learning, museum design, medical portals.
- Business models and infrastructure. Creating labs (physical spaces where the collaboration happens), industry-sponsored classes, and companies creating their own UX schools so they can control the curriculum.

WISHLIST

Some of the ideas that the session attendees wanted but were not sure were doable included:

- Assistantships for people without a college degree
- A way to open doors to students at scale (e.g., not swamped with email and one-offs)
- Inter-disciplinary classrooms

- Peers providing insights into possible career trajectories
- Longer-term collaboration projects

BARRIERS

- Categories of barriers to collaboration included:
- Logistics and infrastructure: labs, contracts, IP, non-disclosure agreements
- Time: Industry is too busy for students
- Time: Too much curriculum to cover for collaborative projects
- Mindsets (e.g., stereotypical thought processes within universities)
- Communication and shared language
- Relationships
- Definitions and understanding of UX
- Definitions and understanding of research, including the recognition of research within practice and academic researchers doing design-led research

OPEN DISCUSSION

The conversation concluded with an open discussion about the topic of collaboration. Some of the topics discussed:

- Each of the roles (researcher, teacher, student, practitioner) can have very different mindsets about collaboration.
- The field of UX is evolving and changing rapidly. For example, today, there is a focus on the visual design (artistic) aspect of UX and less emphasis on the evaluation and human factors (scientific) aspects.
- In industry, data is listened to, but it does not explain why, which academia may be able to answer. That's one possible area to collaborate.
- In UX, companies are starting to pay for education (professional development, training, and certifications). This could affect the nature of collaborations.

A summary of the presentation used to kick-off the conversation and summary notes is available.[6]

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The Creative Performer: Using Sport Psychology to Break the Mold in Design Education and Practice

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Keywords:
design pedagogy, performance psychology, mental skills training, mindfulness practice, cross discipline, AIGA design futures

SUMMARY OF WORKSHOP

Through collaboration between a design educator and a licensed sport and performance psychologist, the Creative Performer workshop at AIGA Decipher explored the intersection of performance, creativity, and mental resilience of design students and practitioners—specifically focusing on a growing need to incorporate facets of mental skills training as standard programming in our design education programs. This particular session focused on mindfulness practice—a key facet of mental skills training at large. The speakers demonstrated how mindfulness-based strategies can be incorporated into classroom projects, specifically to address anxiety increasingly experienced by students as a result of stress and/or pressure points that can occur within and throughout the creative process.

During this workshop, the presenters demonstrated their practice-based, multidisciplinary approach to design education through a group mindfulness activity, a case study presentation highlighting their own classroom-based research with students (a capstone project called "The Mindful Designer"), and a Q&A style debriefing session. In addition, the speakers discussed how mental skills training techniques could potentially be incorporated within or paired with established design methodologies, such as design thinking or speculative design, as an innovative strategy to evolve the discipline of design education to be more responsive to the psychological needs of its students and practitioners. Through

their workshop, the speakers hoped to start a conversation in the design educators community about how we as educators may assist students and practitioners in experiencing greater sustained creative growth and personal well-being through integration of mental skills training within the design discipline.

ABSTRACT

Performance is defined as "the action or process of carrying out or accomplishing an action, task, or function." With that in mind, what is the significance of "performance" within the field of design? A professional performer, such as a dancer or basketball player, will practice, prepare, and rehearse in order to deliver a successful result. The stress and pressures inherent in their process and the attainment of a desired outcome are both a drive and a potential barrier to their performance success. Heavy emphasis on a successful outcome as a marker for judging success is a striking common denominator between designers and performers. Even though both populations are challenged to succeed under the pressure of high expectations, tight time lines, and critiques, the tendency to neglect process and hyperfocus on a desired outcome is a common cause of performance deficits. Designers and performers do not operate in vacuums, much like simply following a playbook does not guarantee success for an athlete, following predetermined steps of a design process diagram does not guarantee successful outcomes for a designer. Moreover, being talented in any performance field is simply not enough, much like being creative or innovative is not sufficient to ensure successful development as a designer. We propose that there is a growing need to address the performance needs of designers as whole people, as human beings who are as affected by the process of creating as they are by the final outcome.

Traditionally, designers are required to push boundaries and creative limits to develop unique outcomes in their work—all while dealing with the interpersonal challenges of working with a client and/or a multidisciplinary team. Emphasis on these creative breakthroughs as well as the stress of deadlines, coping with rejection, fear of failure and critical feedback, and creative blocks as a result of mental fatigue are all common obstacles that must be

managed on a regular basis. These obstacles mirror the unique performance pressures within athletic and other performance arenas. In addition, it's important to point out that we are now asking designers to do even more than we have traditionally expected them to do. The designer of tomorrow is not only fluent technologically on a diverse range of media/software platforms; they are increasingly tasked to be deeply self-aware and capable of tactfully providing design solutions that may encompass sensitive sociocultural and political issues. Additionally, the design process itself can pose unique intrapersonal challenges that are highly relevant to today's emerging designers—hence, the person and the designer are not separate. A designer confronts their own biases, expectations, stressors, identity, values, and cultural nuances as they become increasingly proficient in their craft. Thus, every designer's unique fingerprint must be adapted effectively into their professional identity and work outcomes. These challenges are amplified by ever-increasing expectations and rapidly changing industry demands. In regards to complexity, "AIGA Designer 2025: Why Design Education Should Pay Attention to Trends" states:

> **Problems are increasingly situated within larger systems that are characterized by interdependent relationships among elements or activities. Relationships are physical, psychological, social, cultural, technological, and economic in their effects, requiring interdisciplinary expertise. Constraints compete for priority and are unstable in their influence on the problem situation. Change in one relationship reconfigures others. Methods for working at this scale are different from those developed for solving simple problems and require collaboration among experts in different fields.[1]**

In addition, AIGA's recent development of the Diversity and Inclusiveness Initiative and accompanying task force provide further evidence of an active movement to address the increasingly complex relationship between design practice, education, and society. Forward-thinking design education programs are incorporating built-in curriculum components (such

as the University of Florida Graphic Design's Mint program) that are geared specifically to prepare students to work in culturally diverse communities. By integrating psychological skills, training students increase their understanding of themselves and others and learn effective coping strategies for rising to meet this increase in psychological and emotional demands, therefore filling an existing need in contemporary design and education practice.

Sport and Performance Psychology as an applied field has been spreading within athletic, creative, business/executive, and academic communities. The psychological and emotional rigor of the creative process and its potential impacts on those that practice within the arts has been well documented.[2] Our goal, therefore, was not to reiterate the phenomenon of psychopathology or mental illness within creative populations but to illustrate a strengths-based approach via mental skills training to facilitate peak performance within creative environments. According to "AIGA Design Futures, Trend 5: Resilient Organizations":

> **The evolution of the field depends on demonstrating the value of design in addressing complex problems under a climate of increasing uncertainty and rapid social and technological change. In describing the context for design practice for the future, therefore, AIGA focuses this discussion of business on two related forces: continuing demand from management for innovation, and leadership qualities necessary to innovate through design.[3]**

This directly points to the need for both intrapersonal and interpersonal effectiveness as is necessary for leadership roles. Furthermore, the application of strategies rooted in sport/performance psychology bolsters potential in many of the following domains: maintaining confidence and composure, effective communication skills, anxiety/energy management, cognitive flexibility and acuity, and managing emotions effectively. Multiple other fields are leveraging psychological applications to address the expanding needs within their respective disciplines—design education and practice is at a tipping point in which growth could benefit from the incorporation of mental skills training for the healthy, sustainable development of the field and its practitioners.

METHODOLOGY FOR THE MINDFUL DESIGNER

Rather than outline a methodology for the workshop held at AIGA Decipher, the speakers have elected to provide a methodology for "The Mindful Designer"—the project presented as a case study during the workshop. The speakers feel outlining the full project method is a better fit for properly describing the nature of this research.

JUSTIFICATION + PROJECT PLATFORM

It's important to note that the first step in this process was ensuring that the collaborators were properly qualified in their respective areas of study and were in agreement upon the existence of a real need for such a collaborative project. In this case, a design educator had noticed a general rise in anxiety in his student populations over the past years—specifically in situations where students were faced with uncertainty or adversity in their design processes. This was undoubtedly having an impact on his students' follow-through on projects (i.e., missing deadlines, increased subjective stress and frustration while designing, poor decisiveness) and more importantly on their overall mental health (i.e., sleep deprivation, poor personal hygiene, emotional sensitivity, etc.). It's worth noting the institution in which this research was/is situated ranks in the top ten of public universities in the country by U.S. News and World Report in 2018/2019. This being said, students come into this university system with high GPAs, high expectations for themselves, and, in many cases, a sense of significant pressure from their families to be successful in their academic and subsequent career endeavors. There's no question this pressure spills over into the design studio. This, combined with the rigor, difficulty, and, in many cases, uncertainty afforded by complex design challenges encountered in the classroom created a cocktail for emotional distress that was cause for serious concern. These stress factors led the design educator to invite a licensed psychologist with Association for Applied Sports Psychology (AASP) certification into the design studio as a collaborator and co-teacher.

The next step was discussing what the desired project outcomes would be. Deficits happening in the studio were identified as inability to focus, emotional fatigue, formulaic approaches, and lack of follow-through, etc. Based on this needs-assessment,

the instructors identified mindfulness out of the range of mental training skills as a good fit for this group of students and their needs. Jon Kabat-Zinn, the founder of mindfulness-based stress reduction, generally describes mindfulness as paying attention, on purpose, in the present moment, non-judgmentally. Mindfulness practice encourages us to let go of striving toward an outcome, to look with the eyes of a beginner, and to notice with non-judgmental awareness distractions from the now. The researchers then co-created an experiential project aimed at teaching mindfulness skills progressively to examine the impact of this mental skills on the design process, experience, and outcomes. According to Scott Barry Kaufman and Carolyn Gregoire's Wired to Create:

> **Exercising mindfulness has been shown to lead to measurable improvements in cognitive function by facilitating openness to novelty and surprise, with sensitivity to the environment and disruption of ridged and habitual ways of thinking. It is often an essential daily practice for psychological well-being, minimizing vulnerability to distractions, and bolstering one's creative toolbox.[4]**

The class included 18 senior-level undergraduate students, and a full three-hour course period was utilized to allow the psychologist/ co-researcher to introduce mindfulness concepts, discuss the interaction between performance pressures and barriers and the design process, and teach two forms of mindfulness—mindful observation and mindful breathing. Emphasis on normalizing the students experiences notably established trust and rapport to continue the demonstrations; this normalization and discussion of the design performance process was necessary to reduce stigma about psychological skills training, which is also common in other performance domains (i.e., sport). The researchers encouraged students to leverage their newly acquired mindfulness strategies as both techniques for coping with stress/anxiety (often caused by creative blocks) and as an alternative form of ideation when exhausting other design methodologies. By using mindfulness to refocus students' attention to the present moment (what they were currently experiencing) and to reduce judgment, rather than giving them a brief demanding a future design outcome, students were

able to ideate more freely—ultimately leading to unique ideas for projects. Mindfulness as a concept and skill set then became an anchor for the remainder of the design process over the next six weeks, and students were prompted to continue their mindfulness practices at various points throughout their project, particularly when feeling stuck, anxious, discouraged, etc. Because project ideas were identified by each students' own process, their buy-in toward creating their own project frameworks and executing visual outcomes felt very natural and driven by purpose.

RESEARCH METHODS + PROCESS DOCUMENTATION

This was a (and is an ongoing) form of multidisciplinary, practice-based research in the area of design education driven by actively working with students in a university classroom context. The instructors established dialogue with participants in a variety of information dissemination, gathering, and generation methods that are all qualitative in nature. These include but are not limited to the following: active workshop sessions on mental skills training (particularly mindfulness in this case); applied fieldwork by students by both practicing mindfulness and recording their experience via reflective writing; group and individual teacher/student dialogue about work done in the field by students; active in-class brainstorming/converging sessions in which students work to focus their experiences via writing; and finally project production, documentation, and verbal de-briefing between co-teachers and students.

KEY TAKEAWAYS FROM WORKSHOP HELD AT DECIPHER

- There is a need to create a range of new projects and workshops that focus on other facets of mental skills training in addition to this material on mindfulness—this could possibly expand the conversation and create other opportunities for dialogue within the design educators community.

- Researchers should consider how to tailor workshops and projects for participants who are more experienced in practice and/or research (i.e., not an undergraduate level project). Some participants noted the exercise in mindfulness felt more like a review of skills or knowledge they already had.

- Researchers should continue to articulate the concept of design process as form of performance more clearly and earlier in the presentation to provide stronger context for participants.
- Researchers acknowledge the need to generate more data from participants, as attendees of this workshop expressed concerns about the limitations of a single case study approach (i.e., the application of only a single facet of mental skills training with a limited number of participants).

ATTACHMENTS

Included is a visual diagram to illustrate how and why mental skills training techniques could be incorporated into the design process; we have coined the term The Creative Performer to identity the unique intersection of these fields and their potential educational and practice implications. This diagram was initially developed as a hand-out in response to questions from our Q&A session after we conducted this workshop at Decipher in 2018.

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Critical Race Design Studies: Exploring Practical Approaches and New Opportunities in Design Curriculum

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KEYWORDS
race design studies, socially responsible design, research models, engagement

The purpose of this activity group is to explore and develop an understanding of critical race design studies: its methodologies, practical approaches, challenges, and opportunities. Participants will assess the structure of undergraduate design studios on the basis of environment, approaches/strategies/methodologies, designed products/solutions, and evaluative standards to optimize conditions for practicing critical race design.

Racism is a system, and systems are imagined, designed, and executed. Graphics, designed objects, and illustrations can function as indexes for these underlying structures and can therefore, possibly, be redesigned. This is one of the main theories around the study and practice of critical race design studies. This aspect of design can be defined as "an interdisciplinary design practice that intersects critical race theory, systems thinking, speculative design, design history, and critical making to analyze and critique the effects of visual communication, graphic objects, and their associated systemic facilitations of racial identity." Focusing on critical race design studies provides an opportunity to advance design research by addressing concerns related to both the functionality and practicality of critical race design products as viable tools for social change. Another concern is related to practicing critical race design studies in privileged academic design spaces that are far removed from the communities that they intend to serve. Additionally, considering the implementation of a living lab research concept, social work and urban planning methodologies, and standards for evaluating products of critical design proposes additional ways to strengthen critical race design research.

Key question(s) that participants are encouraged to explore during this activity group:

- What is critical race design studies?
- Where are the gaps in the field of socially responsible design? Do the gaps influence critical race design studies? What are the biggest challenges to this area of design?
- What are organizational and research models of successful and sustainable ways of working in socially responsible design?
- What constitutes the best education and research model for the aspiring critical race designer?
- How can methods used in disciplines external to product design contribute to critical race design studies? Vice versa?
- What is to be said about evaluative standards and impact assessment of design products that emerge from critical race design studies?
- How can we effectively prepare future generations of designers for the area of critical race design?

EXPECTED OUTCOMES

- Identification of gaps, challenges, successes, and possibilities in practicing and teaching critical race design studies
- Increased awareness of design educators and organizations who are leading the charge in reconsidering race, design, and the black subject via critical race design studies
- Proposed methodologies, research models, engagement and evaluation strategies for critical race design studies

SESSION SUCCESS

A collection of proposed suggestions for critical race design studies curriculum:

- Formulation of a directory of case studies for scholars interested in critical race design studies based on suggestions from the activity group
- List of ways to approach university administrators about the importance of and support needed for critical race design research

- Results from a survey on the viability and probability of integrating critical race design studies in participants respective design programs

STRATEGY

The approaches used to engage participants are:

- Brief interjected examples of critical race design
- Energizers tailored to local and corporate culture of Michigan
- Discussion questions
- Short exercise/quick small group breakout
- Use of live polling to encourage personal connections and shared experience between participants
- Brief facilitator and participant debriefing

CONFERENCE THEMES/TOPICS

- Defining design research: defining practice-based research across design disciplines, incorporating culturally significant ways of thinking and making, conducting research to inform the things one makes as well as making things as a prompt for future research
- Doing design research: exploring tacit and explicit knowledge and skills needed for design research, diversification of the design discipline through research (in terms of cultural perspectives, disciplines, access)
- Teaching design research: bringing research to the classroom by connecting one's design research agenda to curricular activities, sharing methodologies, theories, and processes that engage making as a form of knowledge production and understanding

INCLUSIVITY

- Use of live polling and anecdotal sharing to encourage both personal connections and shared experience between participants
- Verbal, visual, and written communication aids

The feasibility of this activity group will rely heavily on sticking to prefabricated prompts and recording methods.

Teaching Designers to Write

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WHY WRITING MATTERS

Though often conceptualized as an academic practice divorced
from professional application, written communication is vital for
designers during and long after they conclude their educations. Even
the most mundane formats—client emails, project briefs, internal
memos—require a certain level of skill in order to function and meet
professional standards. This premise got its moment in the spotlight
when John Maeda's 2017 "Design in Tech" report described writing
as a "unicorn skill" just as valuable as coding for professional
designers.[1] *Fast Company*[2,3] and *Design Observer*[4] were quick to
comment on this aspect of the report for popular and academic
design audiences, respectively. Such media coverage signals the
perceived, practice-based value of writing skills for emergent
design professionals.

For designers participating in criticism and/or scholarship, the
capacity for successful writing holds value beyond client-driven
formats. The discipline increasingly values writing, as demonstrated
by a growing number of contributions to the literature that deal with
the relationship between design, education, and writing.[5,6,7,8] Yet a
lack of intellectually robust and widely read criticism differentiates
graphic design from other design disciplines, such as architecture
and industrial design.[9] Importantly, these neighboring design fields
embrace a model wherein practitioners participate actively in a
formal, flourishing body of literature. Traditionally, the creative
space of the graphic designer has been in the visual and not the
written realm. Now that designers are crossing disciplines more
actively, even aggressively, the need to write—and write well—
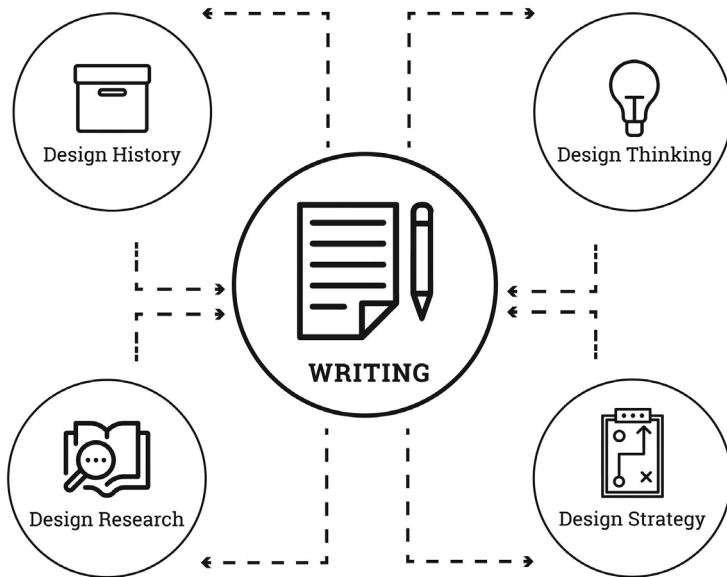
Figure 1: How writing can enrich the design process. Diagram by the authors.

has become exceptionally important (Figure 1). Clearly, design education has an important task in this regard.

As design educators, we often encounter the need to teach skills and knowledge that were not explicitly a part of our own educational experience, from new software to graphic design history. Writing is one such skill set. There is a fairly well-established sense, shared across disciplines, that writing skills are challenging to develop yet critical to professional and scholarly success.[10] As Anne Burdick argued in 1993, "Graphic design is neither strictly visual nor strictly verbal. It is the marriage of the two: fused, bonded, inseparable."[11] Yet design educators maintain a complex relationship with writing. A recent social media post in the AIGA Design Educators Community Facebook group captured the situation on the ground quite successfully: "While I know the content of the publication [my students are designing] is important, I worry that this is not a writing course, and I don't want them to spend as much time on content-creation," Analee Paz Serna, who

Figure 2: Screen capture of AIGA DEC Facebook group post by Analee Paz Serna, August 23, 2018. Used by permission.

generously gave permission to share her post, wrote on August 23, 2018 (Figure 2). "Instead would like for students to focus on the actual design/production aspects. Any ideas or recommendations as to where I can obtain content[...]?" Responses to this post repeated a number of familiar beliefs held by design faculty: writing takes too much time away from designing; many students are scared of writing; design students need to learn how to research and write even though this is a time-consuming process; fear of writing often continues harmfully into designers' professional and/or academic careers; and collaboration can be a useful tool for solving many writing-related problems.

ELEVATING THE CONVERSATION ABOUT WRITING

Like many academics in the design field, we—Dori Griffin and Gaby Hernández, co-chairs of the session Teaching Designers to Write—face challenges in our scholarly writing praxis. Our own experiences as writers who address design issues and as studio-based teachers of design-related writing skills led us to propose this session collaboratively. In designing the session, we

responded both to our own individual situations and to years of informal encounters with fellow design faculty in similar positions. How might we help students develop the fundamental writing skills needed for success in their chosen profession? What deficits in our own educational experiences have become evident as we build opportunities for our students to acquire design-specific writing skills? How might we utilize these realizations both to craft better learning experiences for our students and to articulate needed support systems and relevant tools for design faculty? Our post-conference report seeks to document the conversations among participants and the themes which emerged during the session.

Session Structure

At the outset of the session, we introduced a structure for collaborative enquiry. Using a slideshow as a visual framework, we shared our personal motivations and difficulties relative to writing and how these overlap with what we have observed as common barriers to success in academic writing. We briefly reviewed disciplinary literature related to design and writing, some of which we had cited in our pre-conference documents. In short, this literature documents both a need for design-specific writing skills and a disciplinary deficit in teaching such skills. "A lot of times designers don't know that words are important," John Maeda's[12] discussion of writing as a "unicorn skill" concluded. Maeda's informal observation aligns with one of the few formal data sets intended to study academic writing in the context of the visual arts and design. The studies emerging from this data lent the realization that, compared to peers in other disciplines, "the vast majority of [advanced] students had little experience of academic writing, for their previous education had been overwhelmingly practice based."[13] Thus, these students were required to "come to terms with the experiential elements of analytic writing [...] without the skills of analysis and of analytic writing, data cannot be understood fully or findings communicated effectively."[14]

Despite disciplinary shortcomings in teaching professional and academic writing skills, designers and design educators frequently articulate the value of and disciplinary contexts for writing. "Writing excavates thinking, defines perspectives, and brings patterns into focus," a recent *Design Observer* column proposes.[15] Steven Heller claims that our discipline has always encompassed writing, though

these written contributions to design may have been marginalized or overlooked. "Over the past two centuries designers have done a considerable amount of credible writing," he argues, citing forms ranging "from design manuals and manifestos to monographs and histories—and some have published novels and screenplays, too."[16] The literature, as we shared with session participants, echoes design educators' informal lived experiences of the simultaneous difficulty and usefulness of writing as a tool for disciplinary growth and professional success in design.

After this introduction, we presented key topics and supporting questions for discussion among participants. Here, we highlighted the two primary goals of the conversation—to foster critically engaged dialogues about writing and how to teach it, thereby identifying practical pedagogical strategies and convergences among emergent pedagogical approaches, if any; and to capture collective ideas that could lead to the identification of needs for support, knowledge, and resources related to writing in the academic design context. Finally, we outlined the practical instructions for the session's activities. In the slideshow and on printed cards, we offered two primary or "umbrella" questions and two lists of related sub-questions for participants to use as conversational prompts (Figure 3). These related directly to the session's main objectives and expected post-conference results.

Umbrella Question 1:
What basic writing skills are useful to all designers, and what are strategies for teaching and learning these skills?

- What writing skills are the most important?
- What are (un)successful learning activities that teach writing?
- How do we articulate the value of writing?
- What kinds of cross-disciplinary collaborative models exist?
- How can we cultivate writing skills without abandoning the visual?

Umbrella Question 2:
What capacities are appropriate to specific design domains, and how do curriculum models cultivate these?

- In tight undergraduate curricula, how can we accommodate learning and teaching writing skills?

- In graduate programs, which skills are appropriate to students in each area of focus: practice, teaching, scholarship?

- How do code-switching and multilingualism play a role?

- What are existing and desired writing resources for design faculty?

After the brief session introduction, participants organized into smaller discussion groups of about five (Figure 3). There, they used the question cards to guide their discussion and create opportunities to share their own experiences with practicing and teaching writing. They recorded key words from their conversations on the space provided on the back of each card (Figure 4). Finally, the whole group came together to record convergent themes from the small group conversations. As session leaders, we captured these observations on a white board (Figure 5) and through audio recording. This evidence of participants' small and large group conversations has guided our documentation of the session's convergent themes.

IMAGE: **JESSICA ARANA**

IMAGE: **GABY HERNANDEZ**

IMAGE: **DORI GRIFFIN**

Figure 3: Above—Facilitators explain the session dynamic and main discussion questions. Below—Participants start to discuss some of the questions before reporting to the whole group.

IMAGE: **JESSICA ARANA**

IMAGE: **GABY HERNANDEZ**

IMAGE: **GABY HERNANDEZ**
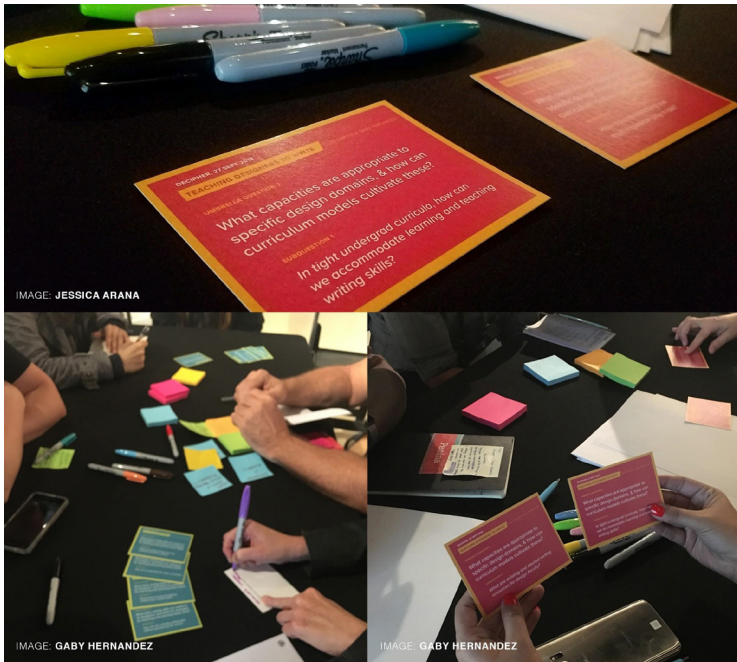
Figure 4: Above—Close-up of cards that correspond to Umbrella Question 2. Below—Participants using the cards and taking notes from their discussion.

CONVERSATIONAL OUTCOMES: CONVERGENT THEMES

During our post-conference analysis of the written, visual, and audio documentation we collected during the session, we observed several important areas of convergence. The key words recorded on the question cards revealed initial areas of shared exploration within smaller groups, while the subsequent collective conversation explored the conceptual nuances and pragmatic applications of these ideas. We have organized all of these responses (written and spoken outcomes from small and large group conversations) into four conceptual themes: design and writing as iterative practices; relationships between design practice and formal writing conventions; writing skills and their associated pedagogical tactics as tools for stimulating enquiry and encouraging inclusive design languages; and writing as a design strategy for storytelling and culturally specific understanding.

Iterative Practices

Iteration is essential to both design and writing, as many participants observed. Making explicit the similarities in these creative processes can be helpful for both students and educators as we engage writing activities. Furthermore, writing can be used as a tool for analysis and exploration during the design iteration process. Participants offered concrete examples of how writing tasks might be incorporated into the design process in order to foreground the similarly iterative natures of design and writing. These included student-written texts as short as slogans or as long as the body copy for a magazine article; formal or informal written analysis of design outcomes at any stage in the design process, from initial sketches to final prototypes; summative or critical written responses as part of any stage of the design or design-historical research process; and student-led writing of project briefs.

Writing Conventions

Participants articulated the belief that fluency with professional writing conventions (for undergraduates) and familiarity with academic writing conventions (for graduates and educators) are important elements of successful design praxis. More specifically, conversations highlighted the importance of students becoming comfortable with the mechanical aspects of writing so that they feel
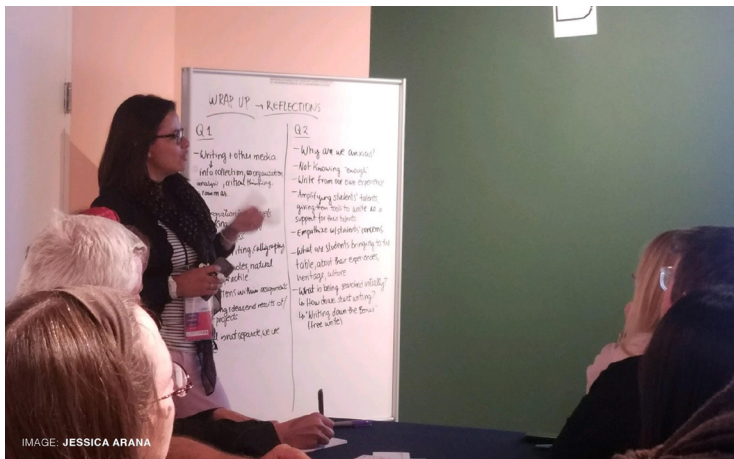

IMAGE: **JESSICA ARANA**

Figure 5. Co-facilitator Gaby Hernandez taking notes during the session wrap-up.

confident writing professional emails, project briefs, artist/designer statements, funding proposals, design reports and reflections, and other day-to-day documents. Mechanical capacities mentioned frequently were *clarity*—through the use of grammar, vocabulary, and syntax; and *explication*—the ability to accurately describe, explain, and transmit knowledge through writing. Building on these skill sets, participants highlighted the importance of using writing to encourage analysis—the ability to evaluate, critically engage, and make rhetorically and theoretically sound arguments. Again, participants emphasized that these skills are important because they are useful for everyday writing tasks that all designers must undertake, such as client emails and project briefs. Furthermore, these kinds of writing activities, which serve a clearly pragmatic purpose, can be incorporated into the studio context seamlessly.

At the graduate and faculty levels, participants expressed a need for increased familiarity with academic writing conventions. Many participants articulated a desire to better understand the differences between commercial, professional, and scholarly writing conventions; a more robust familiarity with the publications within which each kind of writing exists; and the extent to which "non-traditional" forms of writing such as conference presentations, podcasts, and online formats can be valid forms of scholarly dissemination. By building encounters with academic writing into graduate education, participants saw opportunities to help the next generation of design educators grow beyond the discipline's current position relative to scholarly writing. Many—but not all—participants saw this current position as being limited by the need for practicing design educators to independently acquire fundamental academic writing skills that peers in other scholarly disciplines learned during their graduate education.

At the same time, beyond questions of fluency in and/or familiarity with specific academic writing structures, participants valued finding ways to break the stereotype of "traditional" writing. Relative to this thought, they articulated a desire to embrace ambiguity, exploit the relationship between written and visual rhetoric, and re-frame "simple" or "professional" writing tasks regularly undertaken by designers as valid and significant forms of writing. Some participants mentioned audiovisual media, such

as podcasting and film, as alternative ways in which writing can manifest in design learning and research dissemination contexts.

Focus on Personal Experiences and Process

Some participants pointed out the need for designers to build communication channels with students or colleagues to discuss and validate personal experiences. They experienced such conversations as motivators for a new way to write—one that occurs more organically and fluidly. Learning from others about their writing experiences was an important discussion aspect. Participants seemed to have a strong desire to place themselves within an active writing community but did not have many personal connections with other designers and academics who would openly share their experiences with writing.

Relatedly, session participants expressed a desire to engage in more nuanced conversations with students about the role of writing in design. Such discussions can support representation and communication of issues that are culturally specific, helping educators recognize the value of students' personal and cultural experiences as topics or motivators for writing activities related directly to their education. Westernized views that continue informing traditional design teaching make it difficult to expand the reach of writing in this context. The limited opportunities that traditional design canons offer to actively integrate students' stories, as well as to capture the diverse ways students have acquired communication skills, have been detrimental to achieving a more progressive design writing practice across design schools or programs.

In general, participants seemed to agree that writing is an activity that facilitates individual processes of discovery and inquiry. Writing can be compartmentalized in order to bring focus to smaller writing tasks and narrower topics that contribute incrementally to more complex writing exercises. In terms of how writing relates to design research, participants pointed out the importance to use writing not only as a way to disseminate results but also as a tool to reflect on process, fieldwork, and preliminary research activities that may be exploratory in nature. From the personal to the academic and research-based, the discussion moved around ways to conceive design-related writing as an opportunity to manifest

thoughts and views that relate to personal experiences within academic and cultural contexts.

Culturally Specific Narratives

Ideas related to narrative and community were at the core of many small groups' discussions about not only personal experience but also fluency in writing. This suggests that mechanical and analytical capacities alone are insufficient for a fully developed designing-writing tool-kit. Participants prioritized synthesis, cohesive storytelling, an understanding of audience and voice, and the ability to connect written and visual strategies within a single narrative. Participants also valued the role writing can play in building community within the studio classroom, as writing (like design) provides opportunities for creating teams, learning through mistakes, and collaborating. These ideas proved particularly fruitful for further exploration during the large group discussion, building on small group discussions and expanding the large group's framework for understanding the value of writing.

Further elaborating the need to acknowledge our students' cultural contexts, some discussions also revolved around the possibility to use writing as facilitator of culturally specific expression and as generator of new ways to understand diversity. Intentionally introduced into the studio for this purpose, writing can help build safe spaces of practice, particularly in learning environments with students from diverse backgrounds, traditions, and nationalities. When storytelling is motivated by students' lives, new opportunities to practice writing in the design classroom arise. Cultural differences and culturally specific ways of understanding may need to be explicated further and differentiated from traditional or Westernized ways of seeing, interpreting, communicating, and making. The nuances inherent to code-switching and the richness of multilingualism should be considered as valid aspects of and contributors to diverse writing and designing. Valuing students' lived experiences, and the ways these manifest themselves in students' verbal and visual communication, can be articulated through the design and implementation of writing tasks. Writing about design and writing about process can come from a place of personal experience, which offers educators a chance to validate our students' individual voices.

FUTURE DIRECTIONS

Because session time was finite and we deliberately cast a wide net with the question cards, some proposed areas of conversation were not addressed. These provide a potential basis for further inquiry. In particular, as session leaders, we see a remaining need to acknowledge and unpack negative results. We advocate valuing and facilitating formal opportunities to discuss writing experiences that have gone wrong and what we (as design educators and academics) have learned from these failures. For example, what negative experiences have multilingual design educators faced as writers? What gaps in our disciplinary knowledge of writing have proven detrimental to our success in scholarly publishing? In what ways have we as educators failed to cultivate writing for fear of devaluing or abandoning the visual? As an anticipatory discipline, design has the capacity to marginalize failure and concentrate instead on replicating success; yet failure has potential educational value when examined for the purpose of hypothesizing possible and improved futures.

During the session, there was little conversation about educators' experiences as writers, potential deficits in our own prior formal or informal educational experiences, and structures or resources needed to support a hybrid and diverse scholarly practice of designing-writing. How are design professors expanding their understanding of writing and cultivating their own growth as writers? What models already exist? There is a need to survey the ways in which we already undertake writing, in order to formulate a model that reflects our own experiences and informs future growth. Related to this need, we refer interested readers to the post-conference documentation from the Decipher session "We Are Not Alone," which took place before "Teaching Designers to Write" and which addressed some of these themes, particularly in relationship to faculty experiences with writing. Indeed, in retrospect, we speculate that conversation in our session might not have developed in these directions because similar material had been addressed by many participants in the prior session.

In terms of writing resources, some familiar organizations and structures were mentioned briefly during our session. The Design Incubation fellowship program is an existing model for a space

where design educators obtain information, gain experience, share knowledge, and acquire mentorship. Similarly, Decipher offered individual writing mentorship sessions during the conference, and organizers have proposed continuing this model at future AIGA Educators conferences. Yet issues of equity and diversity remain. Not all design educators are able to fund travel to conferences and fellowships, and not all kinds of writing are embraced by models that presume traditional academic writing as the desired outcome. The extent to which the above-mentioned resources actually frame traditional academic writing as the default outcome was not discussed in the session and should not be inferred from their mention here. Rather, some participants demonstrated a desire for resources or disciplinary attitudes that *explicitly* embrace ambiguity and unconventional formal structures with regard to writing. Additionally, some participants reported that their universities have writing centers and writing workshops that are open for faculty—as opposed to student—use. Yet design faculty indicated a lack of satisfaction with such resources, specifically because they are not tailored to the kinds of research typical of visual communication and are too generalist to be of perceived use in the written components of design research. Thus, we would advocate further exploration and articulation of the specific kinds of resources, programs, and structures that would be of perceived value to design educators.

Another unaddressed question that we regard as critical is that of how design education frames the relationship between written and visual communication. How can we cultivate writing skills without abandoning the visual? This is a fear frequently expressed by design educators. While session participants articulated the ways in which written and visual communication are related, particularly when teaching typography, there was little in-depth discussion of larger structural or attitudinal impediments to incorporating writing skills into studio learning outcomes. Typography and language have been connected since the inception of our discipline, after all, yet design students continue to matriculate with what we as educators perceive as substandard writing skills. In our view, this question relates directly to curriculum. If we want to implement activities that teach writing skills, what are the learning objectives that we

can build into the curriculum so that we are valuing design-specific forms of writing? How do we explicitly make time and space for such learning opportunities through the way we structure curriculum? For the most part, discussions were able to accommodate only initial and surface-level explorations of such questions.

Finally, we see a need to explore the ways in which design education might intentionally or unintentionally divorce writing from visual communication. Our students do take classes that teach writing skills and classes that require them to write, often at significant length. What are the studio education practices that might be preventing students from drawing connections between these writing experiences and the kinds of writing that are critical for designers? Do we as educators stigmatize writing as existing outside of our domain and separate it from design practice? We see a remaining need to explore specific methodologies that could enable students to transfer their knowledge from other learning experiences into their practice as emergent designers and the work that they do in the studio classroom.

CONCLUSION

Based on the conversations that took place in the session, design faculty value mechanical writing capacities such as clarity of expression and the ability to undertake explication and analysis in a professional context. At the same time, we value higher-level skills related to creating narratives and using writing as a tool to build community and elevate diverse thinking. We desire increased familiarity with academic writing conventions and the contexts in which these occur, both for ourselves and our graduate students. And though we understand the value of writing and see clear connections between existing studio design prompts and potential writing experiences that might support them, we sometimes struggle to incorporate such experiences into existing curriculum structures. We see a need to bring visual exploration, writing, and other forms of creative expression into unity within our practice; several participants usefully suggested looking to non-Westernized or non-canonized models of creative expression for inspiration. As session leaders, our writing process for producing this post-conference document has led us to the realization that we are left with more

questions than answers. We have confirmed that design educators urgently need spaces to exchange and network around issues concerning successful design writing. We continue to wonder, How can we embrace writing as a design skill and prioritize teaching this skill within the design studio? We expect to uncover new information that can help us respond to this inquiry through forthcoming research and conversations about design-focused writing.

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Demystifying Collaboration in Design Academia and Industry

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Keywords:
Collaboration, Process, Tenure

Designers can find value in a collaborative process in the classroom or in their research practices. We know that other contributors add value to the design process by providing creative perspectives, ways of knowing, and critical evaluations beyond our own. We push ourselves the hardest, and ask the toughest questions, when we know another designer, writer, photographer, historian, anthropologist, etc. will be working on the same problem. As the AIGA 2025 trends point out, our increasingly global world requires interdisciplinary teams to tackle a diverse scale of complex problems. Designers are often ill prepared to do collaborative and interdisciplinary work, or may discover they are facing scrutiny when being evaluated due to the collaborative nature of their work.

This conversation will focus on the _doing_ and _disseminating_ of design research as related to collaboration. We will work to define what collaboration is and what it is not in a field typically rooted in client-based practices and formal outcomes. We will dig into how collaboration may be practiced and articulated differently in academia and industry to uncover connections between the two. We will share collaborative models we've identified in our forthcoming book on collaboration, _Collab + Design Ed: Collaboration in Design Education_. The models spanning academia and industry — _Community Collaborations with Students, Faculty and Peer Collaborations Across Disciplines, Cultural Exchanges, Intra-Disciplinary Faculty Collaborations, and Academy and Industry Collaborations_ — offer starting points into re-thinking collaborative relationships and processes.

We will transition the conversation from focusing on the _doing_ to the _disseminating_ and discuss the assumptions and perspectives of potential evaluators of collaborations. We have found that the process of collaboration is scrutinized and questioned more critically than work done alone when reviewed by our institutions. History suggests this is a holdover from the era of the lone creative genius and continues due to a lack of resources and knowledge available to support new ways of working. When our complex world demands interdisciplinary collaborative work, why is it so difficult to articulate the value of collaboration and what are the factors contributing to this? Understanding the reasons for this scrutiny (by those outside of the collaborative practice) could help to further clarify the justification and explanation for this way of working. We are interested in leaving this conversation with a best practice for articulating collaborative work during the tenure and/ or promotion process.

DECIPHER

A CONVERSATION:

Demystifying Collaboration in Design Academia and Industry

FACILITATED BY:

Marty Maxwell Lane, *The University of Arkansas*
Rebecca Tegtmeyer, *Michigan State University*

PARTICIPANTS:

24 Academics + 10 Professionals

CONVERSATION GOALS:

+ focus on the doing and disseminating of design research as related to collaboration
+ define what collaboration is and what it is not
+ dig into how collaboration may be practiced and articulated differently in academia and industry
+ uncover connections between the two
+ discuss the assumptions and perspectives of potential evaluators of collaborations

DECIPHER
2018 AIGA
Design
Educators
Research
Conference

**COLLAB
+
DESIGN
ED**

easy
uninvited
out-sourcing
easily evaluated
group work
a label
specific tasks
silos
one voice
lone genius
research subjects
work for hire
working with clients
a service
free labor
delegating
territorial
always democratic
a script

Define what collaboration is or could be...

Define what collaboration is not...

"Sharing the idea from beginning to end."

"Collaboration is not a cop-out."

For more information about case studies and teaching methodologies focused on collaboration, see the author's book *"Collaboration in Design Education"*.

CHARACTERISTICS OF COLLABORATION :

honesty
openness
challenging
respect
trust
inclusive

WHAT IS SHARED IN COLLABORATION :

authorship
process
spaces
goals
knowledge
vocabulary
ideas
methods

A COLLABORATION SHOULD ALWAYS …

be balanced with good friction
have equal power hierarchies
be a conversation with listening
address diversity
be mutually beneficial to all
involve productive arguing
include more than 1 individual
create something new
bridge differences

P + T
get involved in re-writing the P + T requirements at your institution

SET EXPECTATIONS
set shared goals, spaces, and times at the beginning of collaboration

WE
too *much* ownership
too *little* ownership
ME **ME**
THE "U" CURVE
prevent this by involving early and describing together
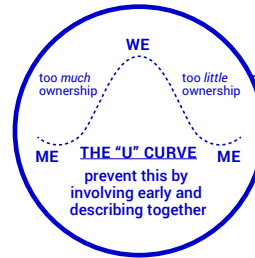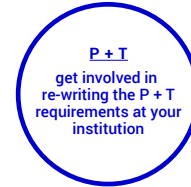
OUTSIDE COLLABORATION :

PI vs. CO-PI requirements
silos in institutions
promotion + tenure requirements
IP / non-disclosure contracts
incentive structures
dissemination

VENUES
target publications that accept and promote collaborative projects

INSIDE COLLABORATION :

community values
transparency
assessment + reviews + roles
reduced hierarchy = no leader
alignment of GOALS
shared SPACES that foster organic collab
common TIME to meet and work
differing language
differing work + communication styles
motivating consistent engagement
documentation of process
individual vs. shared authorship

List barriers and/or concerns with working collaboratively...

"Collaborations fail when priorities are imbalanced."

FRIDAY
PROCEEDINGS

DECIPHER

IN THIS SECTION

Workshop on Proposing, Executing, and Writing Up Research through Design

JOHN ZIMMERMAN
Professor at Carnegie Mellon's HCI Institute

INTRODUCTION

Over the last three decades, research through design (RtD) has emerged as a new kind of design research distinct from design studies done in the academy and user research done in design practice. This approach asks researchers to use design thinking and design action as a way to produce important new knowledge. RtD has become popular within the human-computer interaction (HCI) research community and in design schools in both Europe and Asia. It has made much less headway in the United States, where few design schools have PhD programs and most focus on training students to become practitioners. Recently, some US design schools have become interested in developing research programs and recruiting new faculty who can lead research projects and who can establish collaborations with industry and with other disciplines within the academy. This workshop aims to cover the basics of research through design and to walk through how research projects can be proposed, executed, and disseminated in writing.

BACKGROUND

When engaged in RtD, researchers act much like design practitioners. They work to discover a possible, preferred future by "gaining actionable understanding of a complex situation, framing and reframing it, and iteratively developing prototypes that address it."[1] Over the last several years, RtD has organized around two poles. At one end are researchers making things that point to a pragmatic preferred future, and at the other are researchers making provocative things meant to encourage critical discussion of the current state of the world.[2] This workshop will largely focus on

proposing, executing, and writing up RtD research that falls on the pragmatic side.

Design researchers have discussed how RtD is distinct from but complementary to scientific and engineering research.[3] They note that science seeks universal, generalizable knowledge, in contrast to design's focus on making an ultimate particular. Engineering seeks to make novel, technical advances that offer an objective improvement over the state of the art, in contrast to the subjective, preferred future that is the focus of RtD. RtD seeks to reframe problematic situations, often by changing the underlying goal or objective. In this way, RtD makes a subjective, analytical proposal about a preferred future that both could and should be achieved. This idea of reframing by changing the goal has been a focus of much design research, and it is well discussed by Kees Dorst.[4] Design researchers claim that RtD researchers make more substantive research contributions when they form a research program and repeatedly investigate the same problematic situation.[5]

WORKSHOP STRUCTURE

The workshop is divided into four phases. In the first three phases, workshop participants will share their own experiences of proposing, executing, and writing design research. Participants do not need to share a case study for each of these three topic areas; however, they will need to share at least one case related to at least one topic area.

Phase 1: Proposing Design Research

This phase of the workshop will start with a brief introduction to constructing a research proposal. Next, participants will share their own cases, experiences, and frustrations with writing and submitting proposals. They will discuss their process of discovering potential funders, the work to frame their research toward their funder's goals, challenges with intellectual property, and plans for stewardship.

I plan to cover work on a recent proposal I submitted with two collaborators to the National Science Foundation (NSF). Our proposed work investigates robot re-embodiment, the question of when and if a robot's consciousness should move between different robot bodies. For example, if you interact with an Amazon

Figure 1: Prototype of an IoT (Internet of Things) coffee table that uses social perception cues to communicate to people in the room what this room senses about them. This is one of the robot forms we are investigating.

Echo at home, should Echo also drive your driverless car? Should there be a separate Echo "consciousness" in the home for each family member? I will focus on how we made a strong case for needing design research, because within the human-robot interaction community there is no agreement on when or if a robot consciousness should move. Design research has a lot to offer in situations with lots of ambiguity and few insights of what would be ideal. I will discuss how we worked to align our personal research agendas with the goals of this specific NSF program. Spoiler alert, our proposal was funded.

Phase 2: Executing Design Research

Phase 2 will follow a similar structure to phase 1. Participants will share their own cases of executing design research projects. This includes breaking the work down into executable pieces, coordinating with collaborators and research assistants, participation and/or communication with funders, and work to connect the individual piece of research to larger research programs as well as to master's theses and/or PhD dissertations. Participants will share challenges they faced including dealing with IRBs (institutional review boards) and gaining other types of required permission or resources.

I will share a case about investigating virtual possessions—new digital things that replace people's material possessions (e.g., books, music, money). Our team wanted to understand why people seem to value their digital possessions less than their material possessions. We also wanted to explore what we might do to make people perceive the collections of virtual possessions as more valuable. A big piece of this work involved creating a super teenage bedroom of the future, where teens could hang out with and engage with their collections of material and virtual possessions (Figure 2). The project involved a great deal of piloting to find the level of fidelity, one that allowed participants to feel they were in a teen's bedroom in order for them to more easily draw on their experiences in their own bedrooms.

Phase 3: Writing Design Research

Phase 3, following the same pattern used in phases 1 and 2, will have participants share their own cases of documenting and writing up their research findings for dissemination to different venues, including peer-reviewed publications and the news media as well as less familiar venues such as galleries and trade shows. Participants will share strategies they found successful and challenges they encountered.

Figure 2: Prototype of a future teenager's bedroom where teens could hang out with their material and virtual possessions.

I will share an ongoing project to make a decision support tool. We are collaborating with biomedical engineers to develop a system that predicts how long a patient will likely survive after receiving a mechanical heart. My team focuses on conducting fieldwork at clinical sites as well as design of the interface used by clinicians. I will share how we developed a strategy to publish different aspects of the work in the design research community, in the HCI community, in the medical community, and with the tech industry.

Phase 4: Consulting

The final phase of the research will offer participants time to connect with one another. Based on the cases that have been shared and discussed, participants will have time to approach one another to get advice from other participants on the challenges they face and to even test the waters for future collaborations. This will be an open session meant to build a stronger community of design researchers.

WORKSHOP HOST QUALIFICATIONS

I am a professor at Carnegie Mellon University's HCI Institute, one of seven departments within the School of Computer Science. The HCI Institute is an interdisciplinary department that mixes faculty and students with backgrounds in design, computer science, cognitive psychology, and social psychology. I conduct research on how people might better interact with intelligent systems working across many domains, including domestic environments, health care, education, accessibility, and work environments. I advise PhD students, mentor post-docs and junior faculty, and teach master's and undergraduate students. I regularly apply for research grants (which occasionally get funded), submit papers for peer review (which sometimes get accepted), and help to organize and run organizations committed to design research.

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Developing Students' Instrumental Judgment Capacity for Design Research Methods

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Keywords
design methods, instrumental judgment, rigor, research/practice divide

OVERVIEW

How are we currently teaching design research? How can we do it better? How are educators fostering students' development of "instrumental judgment"?[1] This activity group encourages participants to explore the ways that educators teach research-through-making and research-informed making at multiple curricular levels. For example, students seeking advanced degrees in design are grappling with "rigor" and "distinction," learning how these characteristics of research are defined and understood in other disciplines as well as in relation to creative practice. Meanwhile, educators at K–12 and undergraduate levels struggle to incorporate creative inquiry processes in meaningful ways, grasping for resources and leaning on others' "design thinking" approaches.

Prior to participating in this session, organizers had hoped that attendees would collect and submit three to five examples of materials related to teaching design research, with either successful or unsuccessful outcomes. These could include published or unpublished papers or case studies, books, websites, syllabi, project briefs, documentation of project outcomes, games, card decks, or other resources. These could be authored by participants or could be secondary resources that have been used in a design classroom.

The session aimed to generate discussion, explore examples, discover new resources, and ultimately create a usable cache of tools and references for those teaching (and learning) design research at various levels within and outside of academia.

BEYOND METHODS: STUDENTS' DEVELOPMENT OF INSTRUMENTAL JUDGMENT

Instrumental judgment includes the capacity to choose appropriate approaches to design problems, decide from an array of established options, or create new approaches. Inculcating students' instrumental judgment is one of the duties that design educators must take seriously as we collectively prepare students to move to the next level of their life and work. Owning a design methods book does not teach students at any level to cultivate judgment. Those who have attempted to integrate design research into their courses understand that the task is not as simple as choosing the appropriate book of methods and asking students to select some methods from the book and apply them. Instead, educators must create opportunities for students to step back and see what connects various methods to one another; why certain methods are especially useful in specific contexts or at particular moments in the design process; and where entirely new methods or combinations of methods may be needed to inform intuition, mitigate biases, or gain empathy for the design context. In other words, educators must create opportunities that enable students to develop a mindset toward methods.[2] In order to cultivate this mindset, students require substantial space for experimentation and failure so that they can learn when something is not working or when a different approach would serve them better.

Course	Sample Research and Analysis Methods Covered
UXD Studio 1: Fundamentals	Interview, observation, contextual inquiry, affinity diagramming, task flow diagrams
UXD Studio 2: Screen	Co-design, participatory design, heuristic analysis, probes, experience and user journey maps
UXD Studio 3: Cross-Channel	Wizard of Oz, service design, anthropometric analysis
UXD Studio 4: Strategy	Design communication, workflow methodologies
UXD Studio 5: Specialization	Student-selected

Table 1. Distribution of research and analysis methods across the curriculum.

CASE STUDY: SPIRALING STUDENTS' DEVELOPMENT OF INSTRUMENTAL JUDGMENT

We will briefly describe one approach to systematically developing students' instrumental judgment capacity that has been implemented in a novel undergraduate program in UX design at Purdue University (led by several of the authors).[3] To overcome common course-based instructional constraints in design education, we created a new model of studio education that we refer to as the integrated studio. In an integrated studio environment, students learn across multiple strands of content in each course session, practicing design activities and critique while also blending research, history, ethics, and psychology skills in a reflexive, "spiraling" way. In a cascading set of studios across five academic semesters, students learn about, build, and deepen their skills in many areas of user research, prototyping, evaluation, and design philosophy. A sample of the research and analysis methods addressed in each semester is provided in Table 1.

To achieve our aim of spiraling the development of research skills, we have created a dual-strand studio experience each semester

	FRESHMAN		SOPHOMORE		JUNIOR		SENIOR	
	FA	SP	FA	SP	FA	SP	FA	SP

Figure 1. Map of studio integration and student cohorts across the undergraduate UX Design program.

(Figure 1), enabling students to learn and deepen their skills in the heightened reality of our learning studios, which are engineered to promote certain forms of design development and a baseline of skill. In parallel, students practice their skills through industry projects in a program-wide experience studio environment, where students work on cross-cohort teams on semester-long projects with industry sponsors. Through these experiences, students are encouraged to continuously learn and practice research skills, attending to skill acquisition on the course level as well as the progression and deepening of these skills over time. In this way, we have foregrounded the development of students' instrumental judgment.

DESIGNERS' UNIQUE SKILL SETS

Methods are but one facet of this puzzle. Teaching methods can easily be interpreted by students as a prescriptive way of doing something without an intentional accounting for what aspects of human experience they intend to explore and what analytic or sensemaking lens they employ to abstract the design knowledge and gather insights. As designers, we need more descriptive, exploratory, and generative approaches that value the lived experience and knowledge of individual students. Methods are often weakly taught, particularly when viewed through an instrumental approach, without a commitment toward the unique rigor of design that lies in the designer's character, identity, and sense of competence.[4] Without taking on this broader role of design education, students may quickly come into conflict with other scientific or scientized disciplines when engaging in

early exploratory/generative/evaluative steps that we refer to as research. Often, designers fall back on adding sciences to our work and approaches in order to justify them or to make them seem more credible. While this approach can be useful in some cases, the design discipline may be better served by learning to better describe and discuss designers' unique skill sets, which are bound up in our capacity for professional judgment, particularly in relation to research methods.

SESSION OUTCOMES

In order to capture session participants' thoughts on what contributes to the cultivation of instrumental judgment, they brainstormed to complete a worksheet provided by the session facilitators (Figure 2).

During the session, participants worked individually and in groups to engage in a combination of individual and collective reflection using the worksheets—some worked from a student perspective while others worked from a faculty perspective. An initial synthesis of a cross section of participants' responses follows in Figures 3–6.

Figure 2: Participants were given worksheets that asked them to brainstorm responses to these four questions (adapted from Nelson and Stolterman, 2012).

How do you approach your work?
Mindset / Design Character

FRAME CONTEXT
» look at existing knowledge of the topic
» understand boundaries
» see things clearly
» set up context
» think critically

ENGAGE THE PROCESS
» review / collect data
» seek inspiration
» brainstorm
» research
» collaborate
» inquire

UNDERSTAND VALUES
» determine core values
» check assumptions
» design philosophy exercise
» analyze an artifact through a 'worldview' lens
» histories of worldviews: history, theory, method course
» critique: what are the worldviews already present in design?

EMBRACE UNCERTAINTY
» be ok with failing
» repeatedly ask "why?"

RELATE
» understand stakeholder needs
» be curious!
» be attentive
   show empathy

INNOVATE / IMPROVE
» make a change through communication (educate, improve, enlighten)
» push toward innovative / creative solution
» improve products & services
» make public policy more relevant

PERSONAL

Figure 3: Cross section of categorized participant responses to the question "How do you approach your work?"

PERSONAL

What are you able to do?
Skill Set / Design Praxis

THINK & RISK
» go beyond the artifact
» design critically
» work through mistakes
» take risks

ASSESS ROLES
» articulate skill set
» understand all roles

EXPAND UNDERSTANDING
» demonstrate design research methods in class
» build on art / design foundations
» make in order to learn

APPROACH PROBLEMS
» determine point of entry
» find/identify problems
» problem-solve

INNOVATE / IMPROVE
» make a change through communication (educate, improve, enlighten)
» push toward innovative / creative solution
» improve products & services
» make public policy more relevant

CONCRETE

Figure 4: Cross section of categorized participant responses to the question "What do you know?"

ABSTRACT

What do you know?
Knowledge Set / Design Thinking

IDEATE
» the first idea isn't always the best
» explore / test ideas
» what's possible vs. imagined
» iteration works
» demonstrate process
» confirm design decisions ASAP

DRAW FROM EXPERIENCE
» previous experience
» personal experience
» what don't you know?
» futures thinking

TEST APPROPRIATENESS
» empathy training
» ethnography training
» user focus
» relevance

ESTABLISH BOUNDARIES
» parameters / scope
» efficiency
» pragmatism
» materials

ORGANIZATIONAL

Figure 5: Cross section of categorized participant responses to the question "What are you able to do?"

ORGANIZATIONAL

What are you able to facilitate?
Tool Set / Design Action

HONE SKILLS
» software knowledge
» hands-on
» digital
» craft

CREATE ARTIFACTS
» prototypes
» concept pieces
» finished projects
» functional projects

BUILD UNDERSTANDING
» reading about design methods
» mind-mapping
» list-making

ADAPT
» student perspective: my various faculty / clients / stakeholders have different approaches and requirements
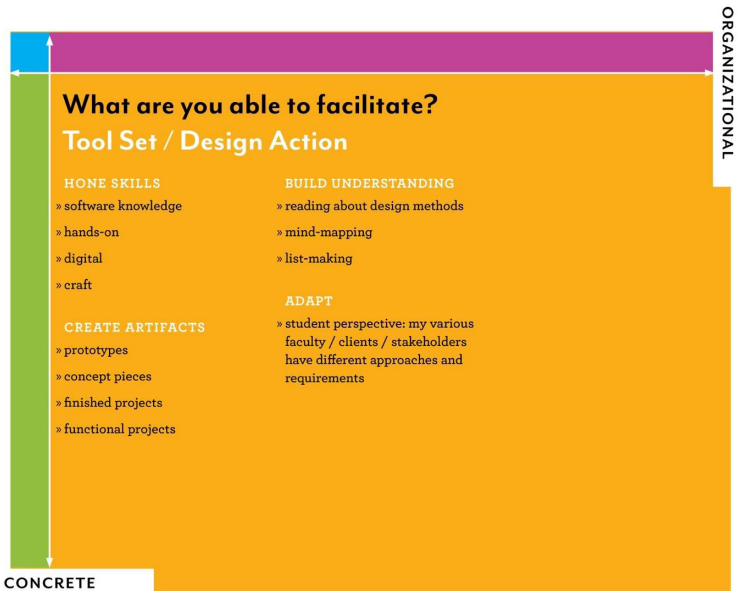
CONCRETE

Figure 6: Cross section of categorized participant responses to the question "What are you able to facilitate?"

CONCLUSIONS

Although it took more time than the authors originally anticipated to establish a baseline understanding of what instrumental judgment meant for the various participants, some key themes and tensions emerged from the session. These include the need to:

- Acknowledge worldviews of various disciplines and approaches to design education;

- Help students identify relationships between design theory and participating in concrete design activities;

- Create continuity and interconnections between courses within a program, particularly within programs where instructors have different views regarding instrumental judgment and the development of methods knowledge; and

- Understand how to engage with texts that document methods in useful and pragmatic ways while also attending to the development of higher-order skills.

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Client-Based Project Work as Experiential Education: Connecting Research to Pedagogy

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Keywords
pedagogy workshop, design practicum, design pedagogy, clients, experiential education

WORKSHOP DESCRIPTION

This workshop explored the teaching styles and pedagogical practices of educators when they utilize client-based project work in design studio courses. How can we effectively connect research about experiential education and design pedagogy to practice-based design experiences with external clients?

CONTEXT

For many design educators, the goal of design education programs is to provide students with a "passport to practice."[1] Design educators' teaching philosophy is learning-through-doing, often through simulation of a professional project via a project brief. This methodology takes place in a studio practicum, considered to be a signature pedagogy of design education.[2,3] Client-based studio practice experiences are implemented widely in graphic design curricula in order to help model the real-world practices of collaboration, client service, and design methodology. However, there is a lack of research about the goals and operations of these practicum environments and how they fit into an overall curriculum model. In 2017, I received an AIGA Design Educators Community Faculty Research grant to investigate and analyze current design studio practices in order to create a suggested framework for learning outcomes and assessment that are consistent with the skills that current employers seek in our students.

I have identified two key initial findings at this stage in my research. First, there are clear commonalities in the practices of advising these studios. Second, my research reveals that there

is a noticeable disconnect between the pedagogy, practices, and awareness of experiential education pedagogy research and what design faculty are teaching in the classroom and how they are creating curricula. To be clear, I believe that as design educators, we are doing meaningful, impactful work in preparing our students for practice. However, our current teaching methods and curricular strategies may not be enough to fully prepare design graduates for the workplace.

In general, the following list identifies points of emphasis in experiential education that do not appear in my primary and secondary research on client-based design practicums. All of these can be conceived as efforts to make tacit and implicit knowledge explicit.

Framing activities (of the teacher/coach)

- Setting goals collaboratively
- Establishing ground rules collaboratively
- Highlighting and explicitly teaching discourses of practice
- Explicating methodologies: What, why, and how are we using tools and methods (briefs, drafts, critiques)?
- Teaching and requiring reflecting-in-action
- Teaching and requiring metacognition

Management activities (of the teacher/manager)

- Creating methods for healthy conflict and resolution
- Structuring feedback mechanisms
- Understanding the role of teacher as coach
- Seeking to improve coaching skills

Curricular activities (of the teacher/administrator)

- Setting course outcomes related to integrative learning
- Setting learning style, creativity and growth objectives for the whole person (academic, personal, and social learning) across the curriculum
- Creating experiences that seek to achieve learning for the integrated whole
- Developing robust assessment (qualitative evaluations, rubrics)

This research project has also led me to question how graphic design educators conceive of their role and teaching style in these studios. Meredith Davis describes three types of pedagogical styles of design educators: art director, Socratic inquirer, and coach.[4] In my primary research observations, there appears to be a strong belief in "modeling" as a teaching method and the pure benefit of learning by doing. Are these methods sufficient? My initial observations are that design educators need to be more aware of the pedagogical theories and approaches they are using as well as those that they don't know about that may, in fact, be more effective.

CONNECTION TO CONFERENCE THEMES

This workshop utilized findings from this research in progress in order to investigate how educators are thinking about and implementing these experiential education methods. As a recent participant in the DARIA Design Summit in October 2017 and a recipient of the 2017 AIGA DEC Faculty Research Grant, I was excited by the intention of the Decipher conference to bridge the worlds of practice and research through hands-on interactions. To that end, this workshop clearly connects to the "teaching design research" theme of Decipher. We investigated how we understand the teaching of design and how that connects to research about design, learning, and teaching. The nature of this investigation also addresses connections (or lack thereof) between industry, research, and academia.

In addition to the Decipher conference themes, this workshop clearly connected to AIGA's recently released Designer of 2025.[5] This calls for design educators to examine the principles of their curricula and determine whether they are preparing students for positions in emergent practices within a knowledge economy with growing complexity of contemporary problems. AIGA's trends include complexity, aggregation and curation, bridging physical and digital experiences, resilient organizations, core values matter, new forms of sensemaking, and accountability for predicting outcomes of design action. In theory, the client-based projects and practicums described in this research should connect to the "resilient organizations" trend and its related competencies of understanding how businesses operate and adapt as well as how

they deal with a range of stakeholders and collaboration. Overall, AIGA's recommendations call for a complex, multidisciplinary design education that is beyond simple design investigations and projects disconnected from multiple contexts.

WORKSHOP FINDINGS

The final workshop was a two-hour participatory ideation session and discussion in which participants co-developed strategies for experiential education in client-based practicum interactions. To begin, I provided background information about my ongoing research findings including literature review, advisor surveys, site visits, phone calls, and conference presentations. Then, I provided a brief overview of design studio pedagogy, citing references from Schön, Shulman, Tovey, and Davis. I showed sample learning objectives and outcomes from practicum syllabi that I have gathered. With all of this information as context, I framed the workshop around the following questions:

- Are these courses and studios structured to achieve the goals of experiential education?
- How are educators and students applying pedagogical research and theory to real-world projects and clients?
- Are we simply replicating a studio or are we fully bridging an experiential learning model with real-world application? What is the value of replication?
- Are we solely focused on professional skills? How do we ask them to integrate it with the learning from their entire degree program?
- Are we truly creating capstone client-based practicum experiences where students integrate knowledge?

Who: Teaching Styles and Pedagogy within the Design Studio

I began the workshop by discussing teaching styles and pedagogy within the design studio. The goals of this portion of the workshop were to understand differences in typical teaching styles and pedagogical methods in the design studio and identify personal teaching style and pedagogical approach. I asked the participants to write their answers to the following questions on index cards:

- How do you know how to teach?
- What is your teaching style?

We briefly discussed their written responses. Interestingly, no one addressed the first question. Regarding the second question, responses echoed the findings of my research. Most instructors clearly valued learning by doing and sought to employ experiential education. The majority of responses described their pedagogical goals, such as being inclusive, collaborative, interdisciplinary, and engaging with students at their current level of expertise. Strategies to achieve these goals included being inquiry and process-driven, challenging yet nurturing, dialogic, and participatory.

What: Course/curriculum—Models for client-based design studios/practicums

Following that first prompt, the goal of the next portion of the workshop was to briefly differentiate between different models of client-based design experiences. We discussed the concept of communities of practice as well as the tenets, ecosystem, and process stages of experiential education.

How: Reframing pedagogy for experiential education

Following the initial framing sessions of the workshop, I then sought to collaboratively generate strategies to create inclusive learning and environments, pedagogy, and curriculum within the context of best practices of experiential education. Workshop participants were asked to write answers (for two minutes) on index cards to the following prompts. They then discussed their answers in groups of three or four at a table for about eight minutes. They were asked to be specific in their responses, describing assignments, evidence, assessment, clients/projects, outcomes, and so on.

Setting goals collaboratively; Establishing ground rules collaboratively

Question #1: What do you already do to set goals and establish ground rules collaboratively? How and how often? What might you do? Participants' responses to these questions can be clustered around the following rough categories: project brief and setting ground rules, reflection, and collaboration/co-creation. A key theme that emerged was the emphasis on the co-development of project briefs as a way for students to construct their own knowledge about

contracts and deliverables. Summarized responses to these questions include the following:

Project brief / ground rules

- » Ask students to co-define briefs alongside the client partner.
- » Allow briefs to be open-ended and revisited throughout the project by building in intentional framing and reframing activities.
- » Require students to create project proposals that function initially as contracts and are then modified to create closing reports.
- » Include roles, responsibilities, expectations, deliverables, deadlines, and success metrics in contracts.

Reflection

- » Require reflective evaluation at the end of the term/project.
- » Analyze how they created or advanced knowledge (their own and/or others) through the project work.
- » Move beyond individual reflection to include reflection between people and groups.

Collaboration / co-creation

- » Focus on collaboration at on all stages of the project and at all levels--within the student teams, with the clients, and other stakeholders in the community.
- » Employ methods of co-creation and participatory design.
- » Emphasize the development of "soft skills" that put process before product.

Highlighting and explicitly teaching discourses of practice

Question #2: How do you highlight and explicitly teach discourses of practice? What do you already do? How and how often? What might you do? Participants' responses to these questions can be clustered around the following rough categories: defining the problem, analyzing design decisions/reflection, feedback from multiple stakeholders and communities of practice. Select quoted responses to these questions include:

Defining the problem

» Activate the role of the designer in actively defining the "problem" of the project.

» Employ problem framing methods that are inclusive, dialogic, and participatory.

» Understand context and multiple perspectives involved in the project.

» Explain the intentions, arguments, and warrants for early framing and subsequent design decisions.

» Emphasize the intended learning outcomes over prescribed project outputs.

Analyzing design decisions / reflection

» Articulate research and design decisions and critique those of others.

» Explain the ways the analysis and synthesis strategies students use in the current project will connect to future projects and work experiences.

» Question assumptions and biases that may surface during research and design phases.

» Highlight the importance of exploration and iteration.

» Build time for reflection during and after the project.

Feedback from multiple stakeholders and communities of practice

» Solicit feedback from fellow students, instructions, clients, and other stakeholders.

» Require multiple presentations within the studio/classroom prior to client/partner presentations.

» Test ideas with potential users/stakeholders.

» Cultivate mentor groups of professional designers that students can interact with.

Teaching and requiring reflecting-in-action, metacognition, and self-reflexivity

Questions: How do you teach and require reflecting-in-action? Metacognition? Self-reflexivity? What do you already do? How and how often? What might you do? Responses to these questions can

be clustered around the following rough categories: reflecting-in-action, metacognition, and self-reflexivity. Summarized responses to these questions include:

Reflecting-in-action

- » Create opportunities for structured reflection throughout the course/project, including self- and peer evaluations, instructor review, and client review.
- » Include analyses of assumptions and challenges and how those have changed.
- » Debrief frequently after important events such as presentations and prototype testing.
- » Turn closing reflections into plans/strategies for future projects.

Metacognition / self-reflexivity

- » Frame design problems as questions.
- » Emphasize continual generation and iteration of ideas.
- » Write insight statements about ideas.
- » Reflect on assumptions and biases throughout iterative processes.
- » Map assessment criteria against evidence and ideas during the process.
- » Keep journals to log ideation and cognitive strategies, almost like a journey map of the design process.
- » Write self-evaluations during and at the end of the project.

Why: Understanding practicum experiences in the context of evolving design practice

For the final portion of the workshop, we widened the scope of the questions to include the field and practice of design, specifically the AIGA Designer 2025 and issues of diversity, equity, and inclusion.

Outcomes for diversity, equity, and inclusion

Question #3: How might you shift a client-based studio practicum experience to make diversity, equity, and inclusion a focal point or guiding framework? Participants' responses to these questions can be clustered around the following rough categories: clients/

projects, reflection, and foundation/pedagogy. Summarized responses to these questions include:

Clients / projects

» Choose projects that address "wicked" social problems within equity and social justice domains.

» Choose clients that focus on diversity, equity, and inclusion as a part of their needs, goals, and/or philosophies.

» Pose design challenges that are more about negotiating conflicts or paradoxes between different populations and communities.

» Map dynamics and disjunctures between stakeholders.

» Solicit community feedback (when appropriate).

» Work on "niche" consumer target markets in order to advance design solutions focused on more diverse audiences.

» Explicitly address issues of diversity, equity, inclusion, and collaboration with students.

» Engage students in the "field" more frequently so they have a direct understanding of stakeholders' voices, needs, sensibility.

» Create projects focused on the "designer as activist."

» Formulate diverse, well-balanced student teams.

Reflection

» Articulate why you are engaging with certain clients and not others.

» Ask students to continually challenge their assumptions when working with diverse clients and stakeholders.

» Ask students to articulate the social and political implications of their proposed design solutions.

» Foundation / pedagogy

» Immerse them in community research and context at the beginning of the project.

» Ask stakeholders from the community and experts in issues of diversity, equity, inclusion and local context to speak with students.

- » Utilize exercises that challenge students to empathize with the experiences of others, such as activities that focus on intersectionality, myths, stereotypes, assumptions, etc.
- » Foster safe dialogue within student teams.
- » Encourage students to talk about personal experiences.
- » Develop shared vocabulary about complex issues.
- » Conduct stakeholder analysis to assess and identify biases and missed opportunities and/or groups.
- » Emphasize the idea that all design is political on some level.

Outcomes for AIGA Designer 2025: Complexity trend

Question #4: How might you shift a client-based studio practicum experience to make the AIGA Designer 2025 trend of Complexity a focal point or guiding framework? Participants' responses to these questions can be clustered around the following rough categories: external clients/stakeholders, project complexity/scale/scope, accountability/ assessment. Summarized responses to these questions include:

External clients / stakeholders

- » Work with people who are seeking deep engagement with students.
- » Foster interdisciplinary collaboration with other departments and students across campus.
- » Challenge client/partner expectations about the nature of their design problem and its potential solutions.

Project complexity / scale / scope

- » Include more client interactions much earlier in the overall curriculum.
- » Shift curricular and client experiences to make complexity a focal point at both human scale and community scale.
- » Seek to work on "wicked" social problems.
- » Take on fewer projects so that projects can be more deeply engaged and require more research that informs the deliverables.
- » Expand the scope of projects by exploring user personas, values, and contexts.

» Utilize more interdisciplinary student teams with students at mixed levels of expertise.

Accountability / assessment

» Build goals and desired outcomes directly into assessment metrics.

» Place greater emphasis and accountability on the implementation, not just conception, of design propositions.

CONCLUSION

The workshop participants clearly worked to frame what they were currently doing within the context of experiential education. In addition, many valuable ideas were generated about how to more deeply connect these practicum experiences to the best practices of experiential education. What I found most valuable were the insights and contributions around reframing outcomes for AIGA Designer 2025 and diversity, equity, and inclusion. This co-developed knowledge will help participants as well as other design educators as I continue to work on this research project and analyze and disseminate my findings.

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Bridging Cognitive Bias Gaps Within Interdisciplinary Product Teams

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This paper makes three claims:

1) Design graduates will enter a *changed and non-traditional work environment* for which they are mostly unprepared.

2) Varying *cognitive biases* of interdisciplinary product team members affect the quality and effectiveness of team collaboration.

3) *Soft power* is a vehicle for influencing and aligning product team members.

We will elaborate on these claims and provide examples of each; some of the examples are provided by participants in the Decipher conference session. To the extent these claims are true, we will need to educate future designers in new ways.

THE CHANGING WORK ENVIRONMENT

Design students will enter a work environment that is 1) fast-paced, 2) data-driven, 3) cost-benefit measured, and 4) in collaboration with colleagues who are co-located or globally distributed. The environment is fast-paced because the competition makes speed-to-market a requirement. Establishing first-mover status can capture a larger share of the potential market and, therefore, profitability. As thought leader companies like Google, Apple, and Amazon make design decisions based on A-B data-driven techniques, others follow suit and engage in similar practices. Design judgments, more and more, follow data science strategies, and these data-driven techniques lead to cost-benefit analyses where designs must be human centered and benefit the company's

goals. Finally, we can no longer assume that team members work in the same location; rather, members may be located in different cities and countries, time zones, and languages. These factors impact team collaboration, a process that can be challenging even under optimal conditions.

Most students, however, learn in siloed environments that shelter them from these four factors. They train in settings where team members consist of like-minded students, namely, other design students. And they do this for one to four years, depending on the nature of their degree program. As these students move into actual business settings, they feel unprepared and overwhelmed. For example, most have only worked on teams with other UX designers; they have little to no experience working and negotiating with software engineers, let alone graphic artists, product managers, quality assurance specialists, and a variety of business stakeholders and management. Of course, student designers are not alone in the way they get educated; business and computer science majors, for example, experience siloed training too, each learning their craft without significant regard to the ways of knowing and doing represented by their future team members.

	Traditional Development Process	Agile Development Process
Time	Versions (many months)	Sprints (weeks)
Design	Strategic white papers	Digestible chunks
Consensus	Difficult buy-in	More easily negotiated
Research	Ethnographic; deep analyses	Short-term and data-driven; intuitive
Costs	Long-term commitment of resources	Limited commitment of resources
Values	Supports strategic goals	Supports short-term values
Focus & Rationale	Getting the right design	Getting the design right

Table 1: Traditional vs. agile development processes along seven dimensions.

Aside from the changing work environment these students will enter, the development process itself has shifted as well along seven dimensions, engaging designers in new ways, from traditional to agile processes (see Table 1).

Time. Traditionally, projects were organized around versions, with each version taking many weeks or months to complete. Agile processes are organized as sprints, with each sprint lasting one to two weeks.

Design. In the not-too-distant past, designs were described as strategic white papers accompanied with extensive design documentation. Engineering work would not begin until all aspects of the design were fully documented. Agile methods, however, provide designs as digestible chunks—specifications that focus on one thing at a time.

Consensus. Because design documents were thick with content and specifications, it was difficult to achieve buy-in among all stakeholders; the process took inordinate amounts of time and persistence. Because the agile process occurs in small bites, agreement is more easily negotiated among designers, engineers, project managers, and other stakeholders (marketing, sales, and leadership).

Research. Extended traditional processes allow for ethnographic exploration of typical and edge cases, including deep qualitative and quantitative analyses. The agile process, by its very nature, focuses predominantly on dominant use cases based on short-term, intuitive, and data-driven research.

Costs. Traditional approaches typically require a long-term and large commitment of resources. Agile processes require a more limited commitment of resources.

Values. Traditional approaches favor strategic company and product goals. Agile processes address short-term values represented by collected data.

Focus and Rationale. Traditional processes, by their very nature, tend to favor getting the right design—a response to deep user needs. Often this leads to many changes with unknown impact. Agile processes focus on getting the design right, creating usable

interfaces and experiences. Necessarily, these are small changes with moderate impact.

Although Table 1 describes a dichotomy between traditional and agile processes, it's more appropriate to see these as end points of seven continua. Only favoring agile processes may reveal new challenges: a series of agile designs leads to larger projects, but deep design thinking and research may occur less. Moreover, agile environments tend to favor the engineers over the designers.

For design students entering the workforce, these process continua and consequent challenges remain mostly unknown. In school, design prompts typically focus on exploration of future environments and social justice systems, not existing products and services. Add to this a set of interpersonal and omnipresent soft skills for most projects—collaboration, communication, empathy, and emotional intelligence—creating more challenges for the education of designers.

COGNITIVE BIASES AND THEIR EFFECTS ON TEAM PERFORMANCE

In addition to the changing environments described above, designers come to their team with perspectives and ways of making decisions different from others on their team—engineers, project managers, graphic designers, and so on. Each brings a kind of cognitive bias to their work without awareness of their bias or that of other team members.

Cognitive biases are rules of thumb that help us make sense of the world and quickly reach decisions, but they're often systematic errors in thinking that limit our perspectives.[1] More formally, "a *cognitive bias* is a systematic pattern of deviation from norm or rationality in judgment. Individuals create their own 'subjective social reality' from their perception of the input. An individual's construction of social reality, not the objective input, may dictate their behavior in the social world. Thus, cognitive biases may sometimes lead to perceptual distortion, inaccurate judgment, illogical interpretation, or what is broadly called irrationality."[2] An example of a common cognitive bias is "confirmation bias." It's described as "the tendency to search for or interpret information in a way that confirms one's preconceptions. In addition, individuals may discredit information that does not

support their view."[3] At first blush, these cognitive biases may appear as maladaptive judgments or conclusions for those holding these biases. Yet, Haselton, Nettle, and Andrews argue that in fact cognitive biases may be adaptations that create heuristic shortcuts for humans to make more efficient decisions.[4,5]

In team settings, these biases may result in unintentional but significant team conflict, particularly during the most stress-filled phases of the design and development process. In effect, chaotic dialog among team members can increase geometrically, if not spike along some power curve at varying points in the development cycle. For example, software engineers may focus on the efficiency of the code, its scalability, and ensuring that each possible path a user might traverse is considered. In this sense, the engineer's bias is to be neutral toward any possible path through the code. A UX designer's bias, however, is to focus on the "main path" through the application. Both views have merit but more importantly represent a cognitive bias, a confirmation bias; both serve their role but place blinders on other priorities, particularly when all sides must push through the complexities of the project. Cognitive biases of team members can create a misalignment among the workers resulting in project breakdowns and a lack of shared vision.[6]

SOFT POWER AND ITS EFFECT ON TEAM ALIGNMENT

Today's designer will be expected to "identify the nature of values and modes of inquiry in various disciplines that contribute to the successful solution of complex design problems,"[7] and this often means recognizing the difference in working styles and definitions of success that each discipline brings. A typical project may include a project manager, software engineers, graphic artists, interactive/experience designers, and a variety of business stakeholders. Differing perspectives can create stronger solutions, but they bring with them a set of cognitive biases that can disrupt communication and accepted ways of approaching problems and evaluating research.

To lessen the effects of cognitive bias and team dissonance, teams can generate common vocabularies and shared visions. A technique that experienced designers employ might be referred to as *soft power*.[8] This term was first introduced by Joseph Nye in a geopolitical context:

Military power and economic power are both examples of hard command power that can be used to induce others to change their position. Hard power can rest on inducements (carrots) or threats (sticks). But there is also an indirect way to exercise power. A country may obtain the outcomes it wants in world politics because other countries want to follow it, admiring its values, emulating its example, aspiring to its level of prosperity and openness. In this sense, it is just as important to set the agenda in world politics and attract others as it is to force them to change through the threat or use of military or economic weapons. This aspect of power—getting others to want what you want—I call soft power. *It co-opts people rather than coerces them.* (emphasis added)[9]

We might describe employing soft power in the development process as getting others to want what you want through careful diplomacy, negotiation, and trust-building. There's a kind of "power borrowing" that occurs among team members. For example, imagine that a designer wants their design to be implemented in code by the engineers. In many organizations, it requires careful negotiation and diplomatic discussion by the designers to get their features implemented by the engineers. When there is a high level of trust between these professionals, the engineers will cede their power to the designers to accomplish this work successfully.

We proposed two models demonstrating the relationship of soft power and cognitive bias. In Figure 1, we see soft power—trust, diplomacy, and negotiation—at a relatively high level at the start of a project. Expert designers use this time to develop trust among team members. Similarly, cognitive biases may not be visible during the early days of a project. Goodwill is evident within the team. However, as project complexities increase—an inevitable period experienced by most team members during difficult ("wicked") projects— cognitive biases among team members tend to emerge; it is as if everyone retreats to their corner. Soft power during this challenging time period diminishes as well. But assuming it was banked in the early days of the project, that is, trust among team members was established, soft power will persist through this period, albeit at a lower level, but persist nevertheless. Once the issues get resolved, both soft power and cognitive biases return to their latent states.
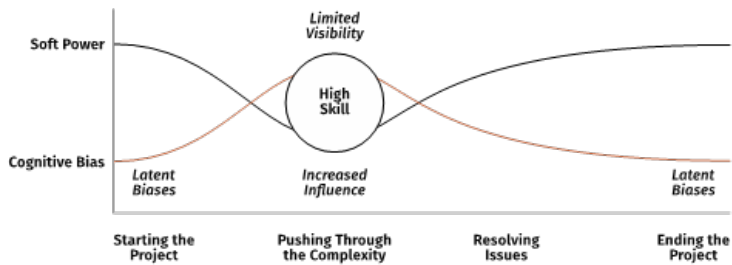
Figure 1: Project journey map showing the influence of soft power on cognitive bias. With increased soft power during the most complex part of the development process, the team members' cognitive biases have limited visibility.
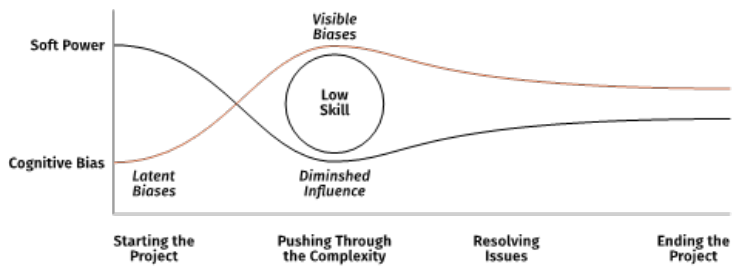

Figure 2: Project journey map showing the influence of soft power on cognitive bias. With diminished soft power during the most complex part of the development process, the team members' cognitive biases become more visible and may continue to the project's end.

Figure 2 shows what happens when trust breaks down or was not solidly established at the project's start. Soft power will have diminished influence on the most critical and difficult period of the project and will remain lost. Similarly, cognitive biases will be evident during this critical period and will remain visible throughout the remaining parts of the project.

During our Decipher conference session, we discussed a number of questions related to the above soft power/cognitive bias models illustrated in Figures 1 and 2:

- How do I effectively communicate research findings to my team (with cognitive biases in mind)? What vocabulary will differ between disciplines?

- How do I build relationships with team members in order to garner soft power?
- How do I build buy-in for spending time doing research rather than acting on intuition?
- How can I become more aware of my own biases?

Although there was little consensus among Decipher conference participants, one conclusion did emerge: design educators need to address the variables that affect team collaboration success and interference more directly and earlier in a student's education.

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Racism Untaught Workshop
Revealing & Unlearning Racialized Design Using Design Research

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Keywords
Racism, Diversity, Inclusion, Racialized Design, Pedagogy, Tools and Resources, Social Responsibility

INTRODUCTION & SETUP

Presenting at the Decipher conference provided us with a space where we could continue to craft a unique workshop that would not only help inform the development of the Racism Untaught toolkit but ultimately spark conversation and suggest ways to create design solutions for racialized design in the classroom. We've defined racism as the conscious or subconscious belief and/or action that supports the social construct of race as the primary determinant of human capacities and the idea that the most predominant race is inherently superior[1]; in short, prejudice + power = racism (i.e., the White race over People of Color in the United States). Racialized design is any design perpetuating any element of racism. We were hoping that after having small groups run through the Racism

Figure 1: Tools and workboard in workshop.

Untaught toolkit, we would be able to create a more solidified kit to run in actual classrooms the following semester.

We set up six tables for interactive groups to converse and walk through the design research process. Each table included a 60" x 30" workboard designed to simplify the design research process using colors and geometric shapes that are easy to follow (Figure 1). A corresponding circle card deck was also created in order to help participants break down their assigned design challenge. Along with the correlating deck, each step included sticky notes, which allowed participants to write notes and move them around to help analyze their design challenge. Each table also received their own design challenge ranging from artifacts like advertisements for soap to personal experiences as illustrated and shown via video. We also provided markers for each category to help folks keep track of their notes for each step of the design research process.

INTRODUCTION OF LAND & FACILITATORS

The acknowledgment of the land on which we are standing is built into the framework of our workshops prior to introducing participants to the toolkit. The US Department of Arts and Culture "call on all artists, cultural workers, public officials, educators, administrators, community leaders, organizers, and engaged community members to open all public events and gatherings with acknowledgment of the traditional Native inhabitants of the land."[2] They outline countries where this is commonplace such as Canada, New Zealand, and Australia. The statement, provided by the University of Michigan, recognized the relationship that exists between Indigenous Peoples and their traditional territories. We read the following statement not out of ritual but rather as a reflection process in which our participants could build mindfulness and intention of where we are.

> "The University of Michigan began with a gift of land by the Native people. In 1817, the Ojibwe, Odawa, Potawatomi, Shawnee, and Wendat (Huron) owned most of what is now Michigan's lower peninsula."

EXAMPLES OF RACIALIZED DESIGN

Before we provided our own examples of racialized design for the groups to analyze, we took the group through some current examples
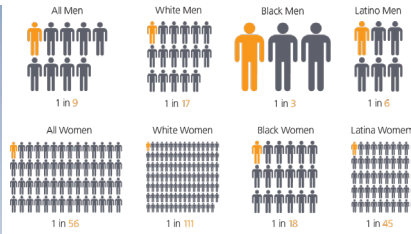
Figures 2, 3, 4: (Left) Nivea advertisement; (top right) visualized data on statistics from the United States prison system; (bottom right) 2017 Pepsi commercial.

of how design can perpetuate a variety of racist elements (Figures 2–4). The first was an artifact—a Nivea advertisement from 2011 that had a clean-shaven Black man holding a mask of his formal afro-wearing self, the text reading "Re-Civilize Yourself." The group was then able to break down the advertisement, pointing out the historical contexts of natural hair in the Black community and how Eurocentric beauty standards continues to alienate and Other the Black community. We pointed out how instances like this continue to happen, especially with beauty companies, who have perpetuated an unrealistic standard and elevate fair skin and straight hair for centuries. The second example was a racialized system—prison. We cited statistics from the Sentencing Project. It is no secret that people of color are disproportionately represented in prisons across the United States. Participants were given the opportunity to discuss the systemic racism which allows that truth to be possible. The last example explored racialized experiences, particularly people of color who experience police brutality. We showed a screenshot of the 2017 Pepsi commercial in which Kendall Jenner was shown to bring community and the institution of police together with a Pepsi. We were able to break down the trivialization of racialized experiences in our media that help perpetuate racism in our everyday lives. We

Figure 5: Participants from the Decipher conference.

were able to use these examples to introduce the toolkit and how folks can use the tools to break down racialized design.

STEP 1: CONTEXT

At the first step, Context, participant groups were given their racialized design example to break down. They used the context cards to identify the elements of racism that appeared in their design. Each context card includes a term and definition of an element of racialized design (i.e., implicit bias). Participants discussed the terms and if they showed up in the example. Once the group agreed on the terms found in their racialized design example, they placed the cards on the correlating circle on the workboard.

This step is meant to prompt discussion in the group; in order to create a safe space to hear the different perspectives, an artifact, system, or experience is evaluated by each participant. We also provide a blank card in each deck that allows participants to write down any word we may have inadvertently forgotten to include. This step often causes pause for some participants, because they might be hearing some of these terms for the first time. As an example, we have included five of the twenty-five cards participants have to choose from:

- Cultural Taxation: a unique burden placed on People of Color to carry out responsibility and service as the only represented minority within an organization

- Exoticism: objectifying, othering, sexualizing, and/or dehumanizing women and femmes of Color who do not align or fit within Eurocentric beauty standards, also known as racialized sexism
- Nativism: policies or systems favoring native inhabitants as opposed to immigrants
- Redlining: the systematic denial of various services to residents of specific, often racially associated, neighborhoods or communities, either directly or through the selective raising of prices
- White Savior: a White person who acts to helps non-White people, with the help in some contexts perceived to be self-serving

STEP 2: DEFINE

The second step, Define, allowed participants to identify ways in which to further explore the context they pulled from the first step. Each card in step two lists a term and definition for a variety of theories and design research methods to help participants uncover more information about the contextualized racialized design (i.e., focus groups). Participants agree on the ways in which they will gain more information and begin crafting a thesis question. We prompt their question by asking three questions: How do they want to use design? What is the impact they want to have? And whom are they designing for/with? These guiding statements helped hone and distill their focus to easily move from the experience they were breaking down to the next step.

Figure 6: Participants from the Decipher conference.

As an example, we have included five of the thirty cards participants have to choose from:

- Eras Map: a visual that provides historical context to the subject being studied, mapping distinct eras in the context and describing them across topics of interest[3]

- Graffiti Wall: a shared writing space where individuals are prompted with a question and anonymously respond with their opinion[4]

- Grounded Theory: a systematic methodology in the social sciences involving the construction of theory through methodic gathering and analysis of data[5]

- Phenomenology Theory: the study of structures of consciousness as experienced by the individual's point of view[6]

- Surveys: polling users to gather data on the attitudes, opinions, and/or beliefs on sections of the populations[7]

STEP 3: IDEATE

The third step included ways in which the group could solve the design challenge they clarified in step two. They went through the step three cards to find a breakdown of types of design in artifacts, systems, and experiences (i.e., poster or health care). They used the cards to help them think about how design elements can work together to solve racism. The groups worked together to get all
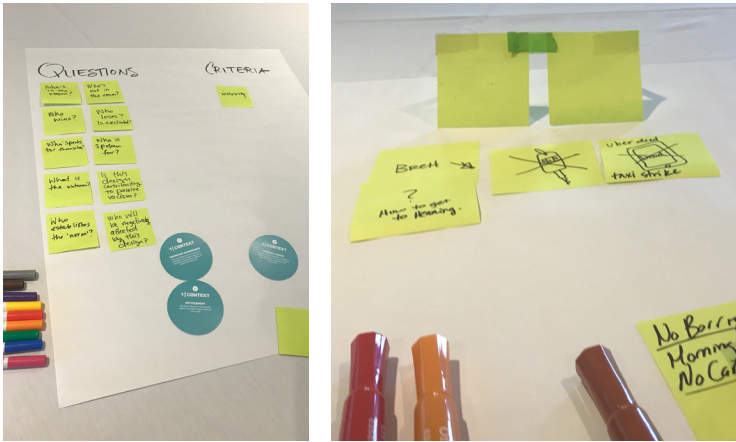

Figure 7: Participants from the Decipher conference.

of their ideas out on the workboard using sticky notes. After they got out their ideas, they were instructed to use the quadrant map to place their ideas and measure how positively impactful they thought their idea would be. The x-axis of the map moves from intent to impact while the y-axis moves from oppressive thought to anti-oppressive action. The quadrant map allowed the group to think consciously about what design concepts to actually pursue.

As an example, we have included three from each identifier from the forty cards participants are able to choose from:

- Artifacts
  - » Gamification: the process of adding games or game like elements to encourage participation and productivity
  - » Stop Motion: a filming technique in which successive positions of objects (such as clay models) are photographed to produce the appearance of movement
  - » Website: a group of World Wide Web pages usually containing hyperlinks to one another and made available online by an individual or organization
- Systems
  - » Criminal Justice: law enforcement directly involved in apprehending, prosecuting, defending, sentencing, and punishing those who are suspected or convicted of criminal offenses
  - » Economy: relating to, or based on the production, distribution, and consumption of goods and services
  - » Environment: the aggregate of social and cultural conditions that influence the life of an individual or community
- Experiences
  - » Artificial Intelligence: a branch of computer science dealing with the simulation of intelligent behavior in computers
  - » Entertainment: amusement or diversion provided especially by performers
  - » Social Media: electronic communication through which users create online communities to share information, ideas, personal messages, and other content

Figures 8, 9: Low-fidelity prototypes from the Decipher conference.

STEP 4: PROTOTYPE

The fourth step, Prototype, allowed participants to experiment with prototyping their ideas. The deck of cards for this step give participants ideas on what low-, mid-, and high-fidelity design ideas would be (i.e., foam core models). They were given a large sheet of paper to draw up low-fidelity prototypes to help the other groups understand how their solution my look. While some participants listed out how their solution would run, others took a more tangible approach by creating 3-D models of their solution.

As an example, we have included a few examples from each low-, mid-, and high-fidelity prototypes:

- Low-Fidelity Design
  - » Cardboard Mock-Up: using cardboard to create an initial "non-functioning" idea
  - » Paper Prototyping: using paper and sketches to create an initial "non-functioning" idea
- Mid-Fidelity Design
  - » Black and White Print: a printed artifact using only black and white colors
  - » Foam Core/Board Mock-Up: using cardboard to create a "limited functioning" idea

- High-Fidelity Design
  - » 3-D Print: a physical artifact printed by laying down many thin layers of a material in succession
  - » Fully Working Digital Artifact: a pixel-perfect prototype with minimal modifications needed

STEP 5: TEST

The last step in the toolkit has since been renamed Impact. With feedback from this session, it was confirmed that perhaps departments and organizations within the institute of higher learning might want to use the toolkit. We moved from the academic language of "evaluate" to "impact" to be more inclusive of community and industry organizations. Although we've since renamed this step, participants can still use it in the way we first introduced it, which is to create a rubric. This rubric is meant to help gauge the understanding of the participants and help the instructor grade their understanding in a conscious and holistic way. The addition to this step has been to create a deck of cards that gives ideas on how impact can be seen (i.e., new mission statement).
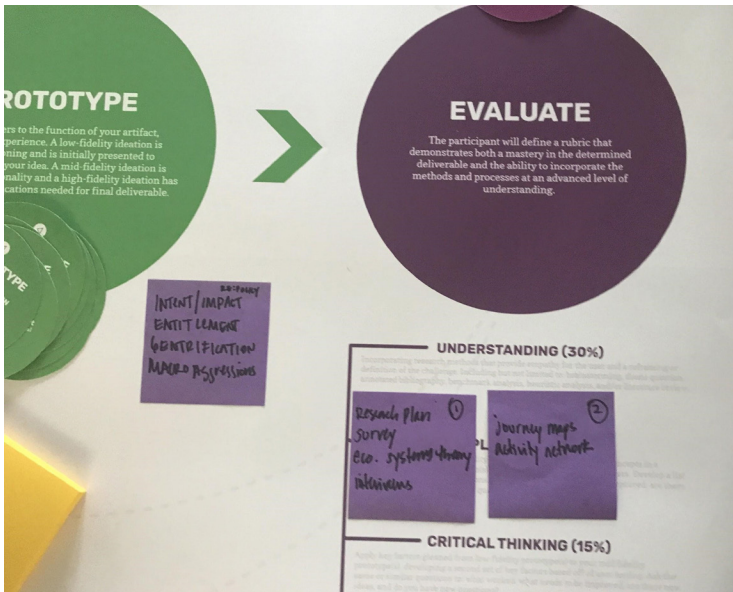

Figure 10: Participants from the Decipher conference.

The rubric included a percentage correlating to specific areas of the process in order to help instructors grade their students design research process if used in an academic setting:

- Understanding (Suggested 30%)
    - » Incorporating research methods that provide empathy for the user and a reframing or definition of the challenge
- Application (Suggested 15%)
    - » The ability to develop a low-fidelity prototype(s), articulate learned concepts in a non-functioning design solution(s), and test the initial idea(s) with users
    - » Critical Thinking (Suggested 15%)
    - » Apply key factors gleaned from low-fidelity prototype(s) to your mid-fidelity prototype(s), developing a second set of key factors based off of user testing
- Justification (Suggested 15%)
    - » The development of a high-fidelity prototype(s) providing a proof of concept that addresses real user needs based off of research acquired through low- and mid-fidelity prototype(s)
- Deliverable (Suggested 25%)
    - » Final artifact(s) as well as a compelling story of the design process. Evidence of aesthetics, critique, justification, organization, usability, skills.

Figure 11: Participants from the Decipher conference.

CONCLUSION

Once the groups finished all five steps, we had time for report-outs. Each group walked us through their given racialized design example, the context, their thesis question, their ideation and prototypes. This group of participants seemed very engaged in the process and were knowledgeable in their feedback after the workshop. We appreciated the participants thoughtful recommendations on the workshop and toolkit. We were able to successfully gauge the participants learning on the concepts of racism and how the kits were able to help them successfully unpack these tough topics.

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Creating a Balanced, Symbiotic Relationship by Integrating Teaching & Research

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As an educator, managing the numerous responsibilities of teaching, research, and service can be challenging. Relative to other disciplines, design educators are navigating a field where research is in its infancy. Adding to this complexity, faculty scholarly activity and research can involve a variety of trajectories, from practitioner-based work to traditional outlets of academic dissemination. With design education continually advancing, design pedagogy provides ample opportunity for the growth of research. Our conversation revolved around best practices for establishing a research agenda and linking it directly to the classroom. By creating a linear connection between research and teaching, faculty may enhance and broaden their research capabilities while creating innovative classroom activities, thus enhancing student learning.

PEDAGOGICAL PRACTICES THAT SHAPE FACULTY RESEARCH

Our conversation session focused on how to derive research from the design studio, specifically how to establish a research agenda within the realm of pedagogy. Linking research and teaching is something most educators strive to do, yet achieving a seamless balance and integration of the two can prove difficult. As educators, by making inquiry a regular part of your teaching practice, pedagogy becomes a trajectory of research. Topics include but are not limited to classroom practices, student learning styles, critique strategies, design activities,

collaborative assignments, and design thinking techniques; these are some of the areas to garner research in the design classroom.

Action Research

Conceived by psychologist Kurt Lewin in 1944, the term action research describes a process of investigation and inquiry wherein action is taken to solve a problem. With a goal of improving and understanding your teaching practice, action research serves as a method of reflective inquiry[1] and a powerful tool for transforming the classroom environment.[2] A study on action research by Miskovic, Efron, and Ravid in 2012[3] stated positive effects of practitioner research such as furthering both personal and professional development while enhancing one's abilities in the classroom. Figure 1 shows steps of action research.

Practices for Collecting, Documenting, and Analyzing Data

Although action research is primarily used as a pedagogical tool for understanding one's classroom, it also serves as a starting point for pulling research from the design studio. In viewing the classroom as a lab for research, data collection can be collected in the following ways:

- Observational field notes—diagramming, quoting, recording questions, and conversations
- Student reported data—surveys and interviews
- Project data—artifacts, process books, and writing samples, analyzed for patterns, trends, and other indicators
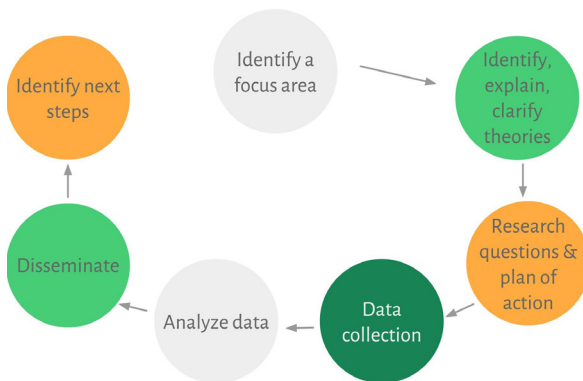

Figure 1: This diagram is based on the research by Richard Sagor.

Writing about your classroom practice from a research standpoint can open up many possibilities of topics to investigate. In analyzing data, Dana and Yendol-Hoppey[4] use a four-step process:

- Read and re-read data: What are the initial insights?
- Decipher the data: begin asking questions about the data.
- Categorize and sort: using rubrics and charts can help sort the information and display where connections emerge.
- Interpret and code: identify themes, begin establishing frameworks. Frameworks can serve as research-informed models for curricular activities based on your findings.

CASE STUDIES OF PEDAGOGICAL RESEARCH

The following examples show how the authors have incorporated research methods into the classroom.

Case Study 1: Critiques Strategies & Methods

In 2013, to improve our critiques in the design studio, authors Jillian Coorey and Grechen Caldwell Rinnert incorporated critical and constructive writing components in and outside of the classroom. Several methods were used and evaluated including Post-it note critiques, online digital forums, project documentation, and round-robin writing critiques. Observational field notes along with anonymous student surveys and student writing samples were used to collect data. Using grounded theory, the writing samples were reviewed by the authors, and numerous themes emerged from the initial open coding (Table 1). The study allowed us to observe connections between a student's writing and in-class critiquing abilities, gaining valuable insight into our classrooms.

Case Study 2: Active Learning Methods in the Design Classroom

After undergoing a program change where technology-based courses were removed from the curriculum, faculty sought ways to manage the teaching of technology alongside theory. After assessing various learning styles, Coorey implemented using active learning techniques, specifically peer learning, as an engaging method to augment teaching technology. Numerous methods were tested in the classroom, such as peer-based exercises, technology

Themes/Categories	Properties	Student Statements
Visual aesthetics	Typography, color palette, design elements, tone, mood, interpretation, impressions, historical inspirations	"Thin rule lines are used to organize information" "Fun, light-hearted, unique" "Color choices refer to cold desserts, yet giving a friendly, fun feeling"
Problematic areas	Aesthetics, concepts, research, copy/message, usability	"Legibility issues with typography" "The navigation should have been consistent in placement" "More in-depth research would have led to better design decisions"
Recommendations	Changes, suggestions	"Colors lacked contrast, try changing" "The illustrations include unnecessary details that do not work with the simplified abstract look, take these away"
Goals	Objectives and aspirations, aesthetic goals, measurement goals	"Gain customers, raise awareness, and help cement identity to draw more people to the store" "Keep a friendly look while highlighting the product is organic and fair trade"
Research methods	Observations, interviews, field notes	"Visited the store, taking pictures, notes" "Conducted firsthand observations at location" "Conducted an interview"
Reflections	Discoveries, realizations, learning opportunities, process	"I learned about myself in regards to aspects of design" "I learned that communication (especially with the client in a real-world situation) is always vital and probably the most important aspect of the things we do as designers"

Table 1: Themes and categories that emerged in our students writing samples from initial open coding.

teams, technology checklists, and group challenges. Observations and student survey data concluded students' comprehension of technology improved while the instructor was afforded time to spend on the teaching of theory and process.

CURRICULAR ACTIVITIES THAT SHAPE AND SHARE STUDENTS' RESEARCH PERSPECTIVES

How do we challenge students' definition of research in relation to design? Often, students equate "research" to be solely visual as they gather imagery from Google and Pinterest. How do we broaden student perspectives beyond tacit knowledge of the design process, to equip them with a toolkit of methodologies to be innovative in practice? The following case studies demonstrate how we are shifting students' viewpoints on research, specifically in relation to competencies from the AIGA 2025 trends. One method is to adopt an inquiry-based learning approach within the classroom. The instructor becomes a facilitator of learning as the teacher-student relationship shifts to one of equal stakeholders. Spronken-Smith and Walker have cited the teaching-research nexus to be strongest when using open inquiry learning, allowing students to take the lead. They concluded that if instructors are "co-learners in the inquiry, this helps facilitate an academic community of practice including both academics and students."[5]

During our conversation, areas of emphasis included:

1. Developing research activities for the classroom that are inquiry-based studies

2. Focusing on the audience to allow a deep dive into the user experience

3. Embracing framed and unframed design problems

4. Research as a means of generating a visual language

5. Community-based design projects, consulting, and collaborating with other disciplines in research investigations

CONSULTING AND COLLABORATING WITH OTHER DISCIPLINES IN RESEARCH INVESTIGATIONS

Case Study 1: Focusing on Audience/Users

In the spring of 2018, Rinnert taught a design studio class engaged in a research challenge to design an interactive experience for children based on real-world prompts from the audience. It was part of a

Figure 2: Students observe preschoolers at a school on campus, 2018. Source: Gretchen Caldwell Rinnert.

Research & Design competition at the 2018 Interaction Design and Children (IDC) conference. Students were broken into teams, and together they selected a prompt. They were required to submit a design concept that responds to a brief and builds on one or more of the ideas of children, accompanied by a one-minute video of their speculative concept for judging purposes.

Using the prompts as a starting point, the students conducted both primary and secondary research. Students, with guidance from their professor, participated in observational research of kindergarten and pre-K classrooms at an on-campus school. There they sat in an observation room and witnessed the activities and behaviors in a traditional kindergarten and Pre-K classroom (Figure 2). The activity helped students to move past their assumptions and better understand their user group. Additionally, some student groups even interviewed K–12 school teachers to better understand the educational needs and requirements of their user group.

Students took their research and prompts and created speculative design concepts, which were both animated demos and interactive prototypes. They were required to test the interactive prototypes

Figure 3: This young child is user testing an app prototype that helps children express their feelings, 2018. The feedback she provided helped students to understand that they needed to add cues and instruction for the young user group. Source: Gretchen Caldwell Rinnert.

midway through the project in order to gain user feedback (Figure 3). Finally, they had to submit their concepts to the official competition.

Case Study 2: Community-Based Design Projects as Practices for Integrating Research & Design

Working on interdisciplinary projects may open opportunities for design students down the road. While working on a website project, Rinnert was approached by a professor in educational technology looking for design help. She connected a student designer,

Rachel Kozy, with Dr. Karl Kosko, a mathematics education professor. The student went on to create an educational app for Apple's App Store that helps children second grade through fifth grade understand basic math concepts. The project is part of SpedApps, a special education project funded by a corporate gift from AT&T (Figure 4).

At around the same time, a design team was needed for a grant project that needed both user interface and UX design on a location-based app that engages citizen scientists. Rinnert recruited a team of students (undergraduates, 1 UXD graduate student) to define the user experience for this app. Both opportunities allowed the students to work on real-world usability challenges, working with developers and project managers.
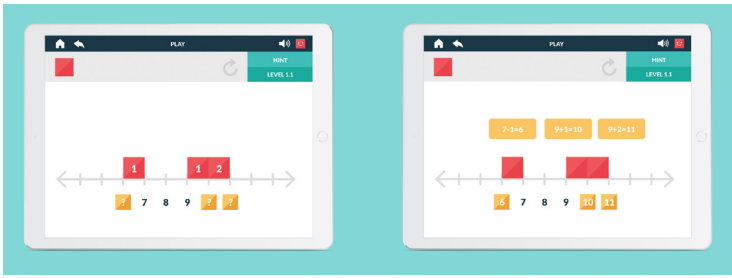
Figure 4: Wireframe and interface designs for Number Line Touch:
www.rachelkozy.com/research-center-for-educational-tech/

Figure 5: Students design and execute a participatory research experiment engaging non-designers in the interface design creative process, 2016, 2017. Source: Andre Murnieks.

Figure 6: A participant demonstrates her design solution's features and functionality using the MakeTool object, 2016. Source: Andre Murnieks.

Case Study 3: Focusing on Audience to Allow a Deep Dive into the User Experience

Ways of knowing are the focus of this course on human-centered interaction design. Author Andre Murnieks designed the course around research methods that would allow students to gain insights into their user's perspective in three phases of the project: generative, participatory, and evaluative. Although the ultimate goal of the assignment is to propose a new interface for a digital device of the students' choosing, the deliverables on the way to that goal summarize testing directly with users outside the course.

This approach keeps the focus on user needs and expectations rather than the aesthetics of a flat digital interface. The ongoing input and reaction from users throughout the project help students consider facets of the user interaction beyond simply a graphic reskinning of an interface. This lo-fi development process also enables students to think outside the boundaries of their discipline by suspending the perceived constraints of engineering and coding. Students are encouraged to work on an empathy-driven concept solution that suits the user rather than trying to "fix" the current device interface.

The participatory phase of the project introduces the notion of "co-creation" with non-designers. The MakeTool[6] is employed as a method to involve users in the creative process by responding to the students' open-ended "what-if" prompt. The activity is not solution-driven but rather asks how a task might be desirably accomplished through imaginative making, saying and doing using the MakeTool as the interface "kit" from which the user can simulate an idealized sequence of interactions (Figure 5).

The output may be a fanciful, yet crude, abstract object held together with Velcro and dreams, but the outcomes are valuable insights into user behavior. The co-creation lies in the conversation between designer and participant through a prop used to demonstrate how the device interface works, and this is possible without the need for graphic design skills or technical jargon. *Doing* is literally acting out the task with shared moments of understanding while discussing points of interactivity and user experience (Figure 6). The takeaways from the session are insights
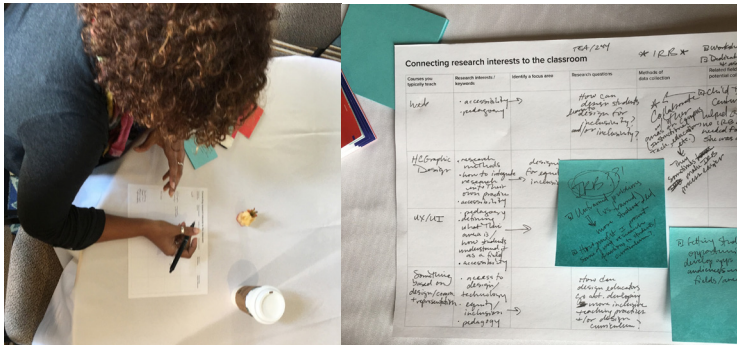
Figure 7: Connecting Research Chart, helping faculty to make connections between their research interests and their classroom activities, 2018. Source: G. Rinnert.

to guide the design development process and, more importantly, drive the designer to see the user's point of view.

CONVERSATION SESSION

During the Decipher conference, our conversation session focused on brainstorming ways to connect research to the classroom. Attendees were presented with a chart (Figure 7) that was meant to be an exercise in self-reflection. Attendees could fill in the courses they teach alongside research interests and their personal questions. The goal was to see if connections emerged or could be explored. After completing the charts, attendees shared methods they were already using, ideas for new research, and questions. One common area of discussion was IRB protocol when bringing research to the classroom. In the small groups, attendees discussed ways to conduct research that adhered to the IRB protocol and protected student privacy and the educational objectives while being beneficial to the researcher.

CONCLUSION

We have found these techniques beneficial in seeking tenure and promotion while also creating a balanced and symbiotic relationship between research and teaching. This type of structure allows students a window into the professional world, with direct access to firsthand knowledge, expert advice, along with methods

for working more effciently and creating a successful research practice. It also allows the educator to share their design passion while shining a light on design research for undergraduates, which may entice some to pursue more advanced design learning. Design professors are required to be excellent educators while forging ahead in new design research endeavors in a relatively young academic field. This can be very intimidating to the new design professor facing tenure. By balancing these two different roles, straddling the professional design world and academia, we transform the classroom to a design lab. We allow research and teaching to be one, a symbiotic pursuit that allows for learning by both student and teacher.

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Identifying and Fostering New Connections with the Public Sector at the Federal Level

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Keywords

public sector, collaboration, design-focused ecosystem, innovation

ABSTRACT

The public sector poses some of the most complex and compelling design challenges around, and yet public servants and policy makers have long sought solutions in this space without the benefits of strategic design practices or perspectives. This session and the actions that follow will advance design research by creating navigable pathways for an array of new collaborations that could both deliver new understanding on their topic areas and illuminate and test responses to the obstacles that currently limit these types of collaborations.

By leveraging The Lab at the US Office of Personnel Management (OPM)'s unique experience as practitioners and teachers who act as advocates and intermediaries between the US federal government and global design community, this session will give design researchers and practitioners the informed confidence and actionable opportunities they need to pursue collaborations with public-sector partners. Ultimately, by expanding meaningful interaction and dialogue between civic-minded designers and government institutions, the aim is to deepen understanding, effectiveness, and impact on both sides.

Following the session, The Lab at OPM's team will work to leverage existing connections and foster new ones that will allow our team to support and enable the potential collaborations identified by participants. These activities may range from simple introductions/

light nudges to the provision of resources and hands-on support from The Lab's staff to build formalized efforts.

Where immediate actions are not identified, our team will remain on the lookout for potential future supporting actions. Our intent in this process is to act as a connector and an enabler to foster engagement between the design research community and the rich, complex federal ecosystem we have each spent several years getting to know.

EXPECTED OUTCOMES

Activities during the session will capture how participants define and describe their individual and/or organizational interests in new partnerships with government as well as criteria for those relationships.

That information will create an actionable array of possible connections that The Lab at OPM will work to foster in the weeks and months following the conference. Think of this as the first step in a matchmaking effort wherein we are seeking to understand the needs and interests of the parties seeking to be matched.

Our belief is that individual connections that result from this effort could provide many types of value to the specific parties involved. Beyond that, they will also broaden the opportunities to explore and learn about how to build and maintain an enabling ecosystem that make this effort more impactful and sustainable in the long run.

Long-run indicators of success would come in the form of stories/ case studies of collaborations that result from this effort as they emerge as well as the creation and sharing of new assets and resources informed by those examples that enable the inclusion of more federal government stakeholders in the innovation and design-focused ecosystem.

STRATEGY

This session addresses many conference themes, including "doing design research," specifically "tacit and explicit knowledge and skills needed for design research." The results of this workshop will create new future opportunities to test existing approaches to conducting design research and to develop new approaches that

respond to the unique constraints and opportunities of the federal government context. "Disseminating design research," specifically "sharing design research across channels that engage diverse audiences (in terms of cultural perspectives, disciplines, access)." The opportunities of interest identified through the workshop will be shared with The Lab's ever-expanding US federal (and global) government network (which, increasingly includes state and local governments as well). Members of those networks represent a wide-ranging array of domains and disciplines. Our intent is to spark new possibilities and create test beds for the application of design research in those areas. "Teaching design research," specifically "bringing research to the classroom by connecting one's design research agenda to curricular activities." As with the NASA/Parsons example that will be shared, the collaborations we seek to spark with this workshop have the potential to bring new opportunities for learning and application directly to students and teachers.

THE SESSION

The session begins with introductions to one another and The Lab at OPM. Facilitators introduce themselves and their work at The Lab at OPM. Participants are asked to say their name, where they are coming from, and what interest or experience they have in collaborating with government.

Facilitators propose that there are greater opportunities and fewer obstacles for designers to work with the federal government than might be expected. Examples of connections that The Lab at OPM has helped to make between the public sector and broader design community are presented, including a case study of a partnership between NASA and Parsons School of Design. During this presentation, participants are invited to ask questions, make relevant comparisons to their own work, and take note of the different value exchanges taking place in the examples and case studies presented.

Using several emerging federal government–focused ecosystem maps our team has developed over the past year, facilitators provide examples of federal government agencies and interagency innovation teams for participants to consider. Participants are asked to work in pairs to imagine potential value exchanges

that could result from projects or partnerships between design researchers or practitioners and various federal agencies (such as themselves or others). Facilitators highlight patterns and record value exchanges as participants briefly share and discuss their ideas with the larger group.

Facilitators present common protocols and constraints of design and innovation projects in government (e.g., agreement types, calendar milestones, political/privacy regulations) for participants to consider. Participants are challenged to incorporate these practical considerations into a brief design or research proposal for a specific government agency or group.

Participants are invited to share and discuss their project/ partnership proposals and submit them for The Lab at OPM to promote across their network. Facilitators draw out promising elements and themes from participants' proposals, make recommendations for refinement, and suggest next steps for making introductions and brokering connections. Note that in the weeks and months following this session, The Lab at OPM will work to identify relevant points of contact for the potential collaborations identified and will work to foster those connections to see where they might lead.

Principles of Practice for Designing with People: Exploring Ethical Frameworks, Mindsets, Values, Knowledge, and Skills for Today's Design Researchers

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This session invites participants to contribute to an ongoing dialogue about a number of increasingly important practices, support mechanisms, and frameworks for cultivating the appropriate knowledge, mindsets, values, skills, and resulting ethics for today's design researcher. We seek to engage participants in emerging issues, ethical imperatives, needed resources, and national priorities in regards to design research and aim to contribute to an evolving map of the practice of design research and the resulting ethical concerns.

The goal for this session was to enable participants to work together on questions around design research and ethics. Utilizing a series of design-based activities, we asked participants to externalize their perspectives and experiences so that breakout groups could then collectively explore and articulate the various issues that contemporary design may need when engaging in research and activities with people.

To achieve this, we organized the 40+ design educators and practitioners who joined the session into two groups. One group, led by Pamela Napier and Terri Wada, focused on outlining the range of research mindsets, skills, and methods important to a contemporary design practice. The second group, led by Sean Donahue and Gwynne Keathley, focused on articulating the emerging issues and dilemmas of engagement when including people as part of the design research endeavor. The outcomes of this group's work contributed to an ongoing national effort to articulate accountable practices that can support design to ethically and responsibly operate within the dynamic and growing areas of application and the broader array of communities they engage with.

SHARED FRAMEWORKS

The four organizers, each invested in advancing different areas of design research practice, identified a set of shared questions that framed their work within a wider set of design research challenges. These shared questions worked to reposition their continuum of interests not as differing segments but as complementary practices, each affected by the other and equally implicated in the developing answers. The questions were created to be reflective of the contemporary realities of exercising design research within the challenges and opportunities unique to this century.

Those questions were:

- How do we see/view design research now?
- What drives "design" research?
- What are different applications/areas of the work?
- What needs to be developed to support these new "design"-led research practices, responsibly, for design?
- How do we describe/communicate the research capabilities we offer?

SESSION SUMMARY (NAPIER & WADA):

Nearly 20 participants joined this breakout group and engaged in a series of activities that enabled them to communicate the types of projects that they do or teach, as well as the types of design

Figure 1: Liz Sanders describing her "Evolving Map of Design Practice and Design Research" with participants.

Figure 2: Participants sorting and grouping mindsets, knowledge, and skills.

research methods that they conduct. They began by plotting these methods to Liz Sanders's "Evolving Map of Design Practice and Design Research" (after a brief introduction of the map by Liz Sanders herself; Figure 1).[1]

Participants then went through a process of identifying key mindsets, knowledge, and skills needed to carry out those methods (Figure 2). Mindsets were defined as "a set of attitudes that shape actions and behaviors." Knowledge was defined as "facts, information to theory of a subject." Skills were defined as "an
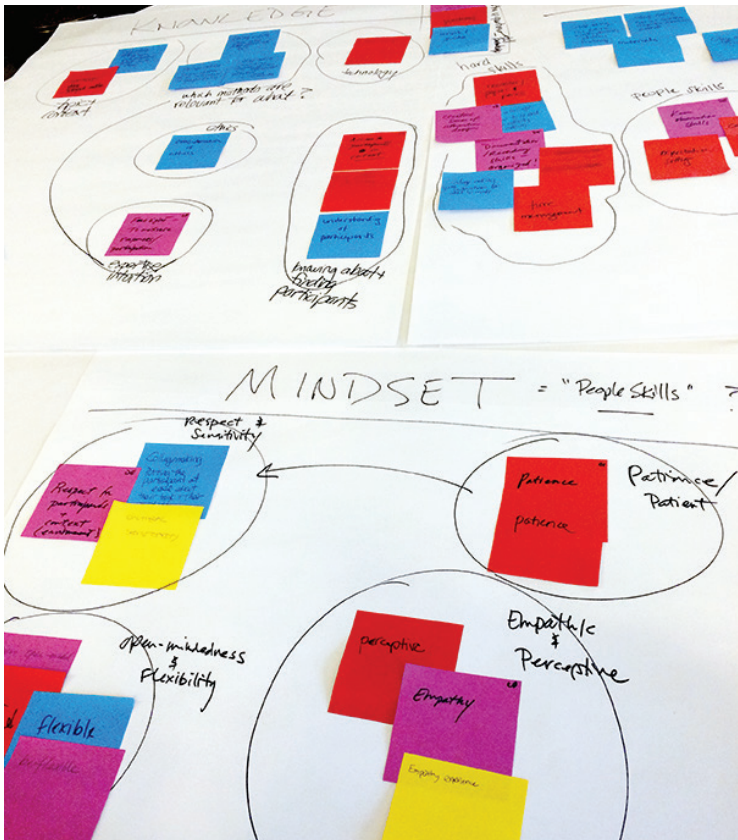
Figure 3: Affinity groupings from one table group.

ability to do something." Each table group then spent time affinity diagramming within each category, creating themes or buckets within each of the three areas (Figure 3).

Although each table group developed their own emergent groupings and themes, much overlap was found during the final table out. An initial high-level synthesis of the themes revealed the following:

Mindsets:

Within mindsets, the three most repeated themes were inclusion, open-mindedness, and empathy, while some groups also included critical thinking, flexibility, and patience.

Knowledge:

Within knowledge, the three most repeated themes were contextual knowledge (i.e., people & places), design research methods (i.e., ethnography, ideation techniques, etc.), and ethics.

Skills:

Within skills, the two most repeated themes were "hard skills" (i.e., documentation, making, organization, analysis/synthesis), and "people skills" (i.e., empathy, listening). One group added "facilitation" as a needed skill, which is deeply connected to the ability to facilitate and conduct design research methods.

Additionally, one group added a "resources" category to the overall framework of mindsets, knowledge, and skills, listing things such as space, tools, and materials.

While this initial synthesis is just a start, the goal is to continue this research, engaging with design educators and practitioners to develop a framework for the essential mindsets, knowledge, and skills needed for today's design researcher.

SESSION SUMMARY (DONAHUE & KEATHLEY):

Participants in this breakout group were asked to organize into smaller five-person conversation groups, each to organize around one of four tables. The tables hosted a suite of activities designed to function as conversation catalysts, helping to initiate and frame the ensuing discussions (Figures 4–7). Given our topics revolved

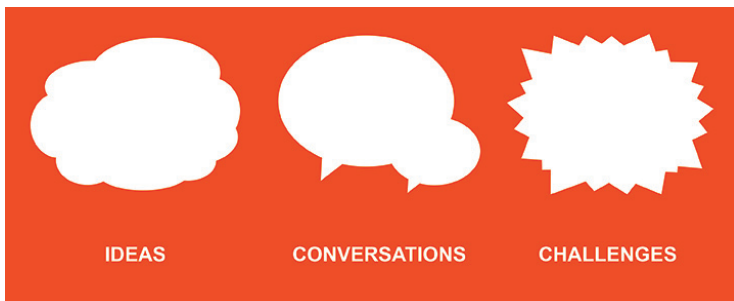**IDEAS**   **CONVERSATIONS**   **CHALLENGES**

Figure 4: Our three calls to conversation—meant to support discussion of the implications of engaging people as part of the design process. Image Credit: Sean Donahue

Figure 5: Design activities being used to share personal perspectives on each of the calls to conversation. On the other side of the call participants were asked to articulate what would be required to move an issue forward. Image Credit: Sean Donahue.

Figure 6: Participants organizing their considerations into shared areas of concern and opportunity. Image Credit: Sean Donahue.

Figure 7: Participants sharing how they chose to organize their conversations—what and who would need to be involved to address the issues. Image Credit: Sean Donahue.

around design and the ethics of engagement, we recognized the potential for complicated exchanges surrounding design's successes, failures, and inadequacies, particularly as it relates to addressing underserved, subjugated, and vulnerable populations. This important consideration led to the design of these tools for conversation in such a way that invited different and differing ways to express, share, diffuse ownership and/or personification while still providing ways to say the words and externalize these (sometimes uncomfortable and messy) realities. This allowed for a discussion that not only expressed the problems but also developed tangible ways to address these important and critical ethical concerns.

Key takeaways from the group's efforts fell into two categories. The first was a series of larger questions, resources, and systems for the discipline to exercise across institutions and practices. These included:

- A library of existing examples to use in research and teaching.
- Shared resources for reference and training that could be used in education and professional practice.
- A series of key frameworks that can be used to develop ethical orientations for research in diverse contexts.
  - » Not just a list of dos and don'ts, but ways to respond to the reality that ethics change depending on who you are, who you are working with, and where you are working.
  - » These frameworks should also directly discuss issues of race, gender, and power.
- Guides for design educators to respond to students and/or other faculty whose work is harmful and/or fails to recognize a more considerate ethical imperative and academic mechanisms.
- A sustainable institutional review board (IRB) process fully integrated into studio culture.
  - » Developed institutional mechanisms to support IRB as an academic system of accountability.

The second category of key takeaways include issues that more directly engage students, classroom project engagements, and individual practices of ethics in action:

- How do we teach students to apply an ethical system, not a solution, and have conversations about questioning what is perceived as right and wrong?

- When a designer is engaging people, who should be involved? Who should guide the decisions? Negotiation is imperative to develop one's own framework for practice.

- Whose responsibility is inclusion? How does design encourage contributions that explore diverse perspectives? What are ways to empower students/practitioners to talk about and contribute to this growing issue?

- How do we help designers understand that researching with people requires flexibility? A project may start one way but end up going another, and it is the designer's responsibility to respond.

CONCLUSION

The outcomes from both breakout sessions highlights the growing need for more critical development through shared dialogue to build references, discourse, and infrastructure that span design's diversity of institutions, practices, and people, forming a collective that works to advance existing boundaries. This includes learning from those that identify outside of the design disciplines as well, particularly those who have been engaged in these issues as part of their practice already. Such views would add much-needed diversity and experience to a very internal conversation, helping the discipline to reflect and develop a design specific orientation and set of practices that support its advancing engagements in research.

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In What Ways Do Critical Practices (Re)Invigorate Design Research?

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CONTEXT

Critical practices in design refers to a range of approaches and
terms: critical design, critical making, digital humanities, design
fiction, and design authorship, for example. "Involving a speculative
approach to design (experimental, expressive, future-oriented),
critical practices combine an authorial point-of-view with research
and the tangible aspects of media, technology, materials, and
process."[1] Critical practices often involve "pre-search," as they
establish both a topic of inquiry and a discursive method for
investigation, commentary, or activism, as "not only an operational,
but also an intellectual basis, for design research."[2] This type
of inquiry reveals itself through a combination of practice and
scholarship. Critical practices involve design modes, methods, and
processes, which can generate new knowledge and support the
conceptual, relational aspects of subject matter that may not be
adequately articulated through text alone.[3] Resulting prototypes
may serve as types of primary research in that they can address
research questions in theoretical terms. Though there is general
support for this within design literature, critical practices have
not yet been thoroughly investigated in the context of scholarly
design research agendas or academic culture at large. The three
diverse practices discussed here vary in media and topic but share
a philosophical premise: that designers should use their voices

(and skills) to communicate outside of the dominant paradigm of commercial practice.

CONVERSATION FORMAT

The session "In What Ways Do Critical Practices (Re)Invigorate Design Research?" began with short visual presentations of our creative research, setting up a context for the conversation. With disciplinary backgrounds in design, rhetoric, and art, and with international dissemination through publications, presentations, screenings, exhibitions, collections, social media, interactive environments, and entrepreneurial ventures, we brought diverse approaches to the topic of "In What Ways Do Critical Practices (Re)Invigorate Design Research?" by asking this question: In what ways are "critical practices," studio-based forms of inquiry and commentary, legitimate types of design research, and what do they reveal about design questions and disciplines?

The illustrated works and captions in this paper are provided by each of the three conversation conveners and were shown during this part of the session. All of the works have been disseminated in juried venues (exhibition, presentation, etc.) and/or theorized about in peer-reviewed publications. As already discussed, works of critical practice are not necessarily based in empirical or traditional research methods. The images of our work serve to exemplify practice-based investigations undertaken as a means to explore phenomena, social or political issues, or theoretical questions. Each work is accompanied by a brief description that includes details about dissemination venues; we've included this to show readers how they might strategically think about publishing, exhibiting, or presenting similar endeavors of their own.

This is followed by documentation of the questions asked by conversation participants at the session and our concluding thoughts.
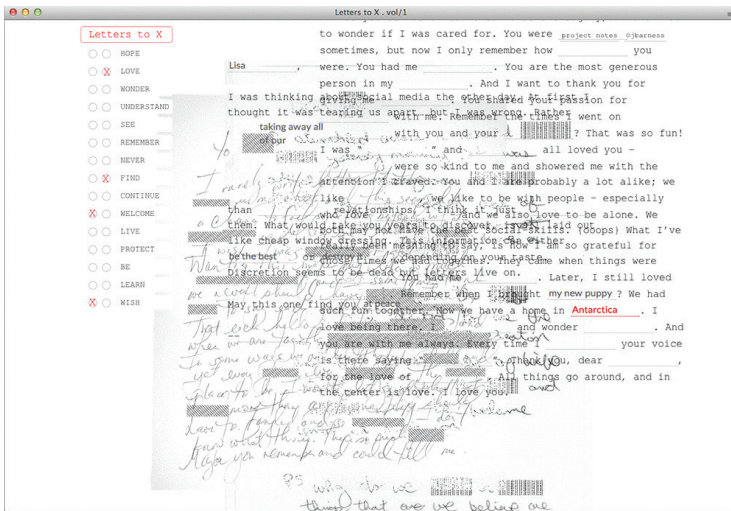
Barness, J. (2015). *Letters to X.* Digital interface, and 16 anonymous hand-written letters.

JESSICA BARNESS

Letters to X (vol. 1) is a digital interface developed as part of my ongoing inquiry into correspondence and human interaction. I invited writers, poets, designers, and artists to collaborate with me and handwrite a "letter to X" ("X" could be me, another person, no one, the universe, and so forth) that contains content that is, in some way, personal and emotionally driven—the sort of content one might not typically email, text message, or post to a social media website. It is also a study involving text analysis and digital writing. All personal data was removed from the handwritten letters, and they were reconfigured into typed phrasal templates (i.e., Mad Libs). As a research project, I presented *Letters to X (vol. 1)* at the Textual Machines international symposium (University of Georgia). As creative work, it has been exhibited in various venues: juried exhibitions *Project Passion* (Minnesota State University–Mankato) and *Breaking Barriers* (East Tennessee State University) as well as curated exhibitions *Édition, Forme, Expérimentation* (Université de Québec) and *Her Environment #8 Small Living* (September Gallery). The work was awarded Jury's Best of Show at *Project Passion* in 2015. [www.jessicabarness.com/letters2X/]
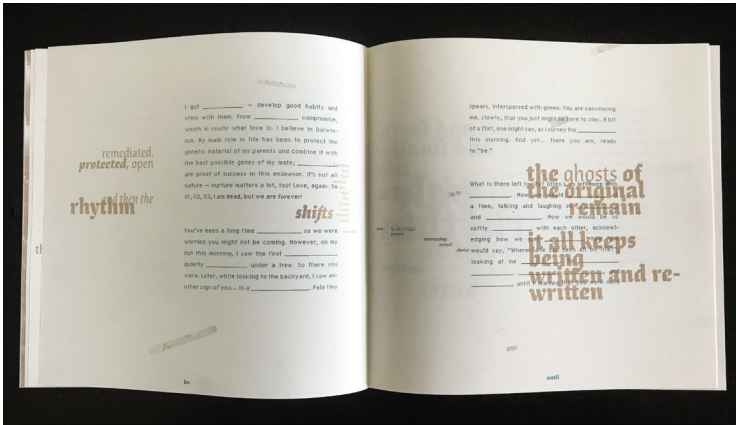
Barness, J. (2016). Glosses (Letters to X . vol/2). *Paper, risograph printing, and 16 anonymous handwritten letters.*

Barness, J. and Giles, V. (2016). hEar Pixels. *Flexi disc vinyl record, risograph printed sleeve, and original audio recording.*

Glosses is the second volume of *Letters to X* (see previous figure). In this iteration, my written commentary on correspondence and human interaction is visually integrated with the reconfigured correspondence. Some of the text analysis data from the first volume is also included. Gold ink was chosen for its historical connection with manuscript illumination and glossing/annotations, both of which are considered collaborative forms of writing that can conceal, reveal, expound, destabilize, obscure, and divert attention from a main text—not unlike social media. *Glosses* has been exhibited at juried exhibitions *The Paper is Part of the Picture* (Drake University), *Structure Unbound* (Wright State University), and *Text, Type, Typography* (The Marymount California University). In 2017, *Glosses* was awarded in the STA 100.

hEar Pixels is an audio collaboration between me and DJ hip hop artist Vince Giles focused on the concept of "conversation as an object." The end result was manufactured as a single-side, 33-1/3 RPM Flexi disc pressed on clear, flexible PVC. Track 1, "Political Favors," was created to be heard through a loud, public sound system; Track 2, "Like A Letter, You," was made for private listening through headphones. Influenced by live performance, technology, and sound collage, the result is a fabricated dialogue of human interaction. The object itself has been exhibited at juried venue *Project Passion* (Minnesota State University–Mankato) and at various invitational venues. It was also part of the Intermission multimedia portfolio developed for the SGC International FLUX conference, which is now in permanent collections at Portland State University, Pacific Northwest College of Art, and Kennesaw State University. Furthermore, the project is also sound studies research; Track 1 was published (mp3 and abstract) in a special issue of Portuguese literary journal *MATLIT: Materialidades da Literatura.*

Vision in the Making is a text composed entirely of lines taken from the editorial introductions published in the first issues of design periodicals, 1902–2015. Inaugural editorial introductions occupy a peculiar place in design literature: they are part informational (introducing the new publication) and part manifesto (making promises for the future of design). *Vision in the Making* was made through cutting and pasting photocopies, faxes, and scans of the inaugural introductory texts; the original typefaces can be seen

As a hybrid journal, design practice

total design

design activity will be addressed from an

educational, historical, technological or practical perspective.[31]

This requires research, discourse, and debate.[32]

Design has acquired not just a history but also a historiography.[33]

not only an increasing amount of critical analysis, but also of critical practice.[34]

There are no sharp breaks—no boundaries—where the realm of science ends and those of the humanities and art begin[35]

The formation of a new set of directions for thinking about design is a long-term project.[36]

it will be critical that any new approaches and new solutions are inherently sustainable.[37]

Our project is, of necessity, a political one,[38]

The aim of this journal is to be provocative and to raise controversial issues?[39]

tacit knowledge, conditions for creative performance, serendipity, creativity of teams, organizational culture and entrepreneurship make up a sixpack brimfull of potential controversy.[40]

Barness, J. (2017). Prototype for Vision in the Making visual essay. *Paper, tape, glue, and selected excerpts from editor introductions to design periodicals.*

throughout. The finished piece includes a total of 128 appropriated snippets, with each referenced using Chicago style; it is a merging of historiographic inquiry, graphic design, and creative writing. *Vision in the Making* was published, alongside my article on the project, in the first issue of AIGA scholarly journal *Dialectic.*

REBEKAH MODRAK

Re Made Co. [www.remadeco.org] is a work of discursive design that takes the form of an "online company" recreating actual company Best Made Co.'s website, video, and social media. *Re Made* is identical to Best Made, save for the titling of the company, the substitution of an artisanal plunger for Best Made's artisanal axe, and the placement of fictional "founder" Peter Smith-Buchanan in the position mirroring Best Made Co.'s founder Peter Buchanan-Smith. Smith-Buchanan uses Buchanan-Smith's own words to humorously but critically call attention to a complex range of issues, including the transformation of functional tools of painstaking manual labor into expensive fetishes for affluent urban men and the celebration of white male aggression. In a Best Made video, sophisticated graphic design makes it stylish to portray images of white men surrounding a tree and watching one another strike it with an axe. *Re Made* critiques the misapplication of design put into the service of selling cultural appropriation and misogynistic messages.

Re Made began after watching the aforementioned video and the Best Made brand video and being disturbed by assertions of male aggression in association with patriotism and by the appropriation of working-class symbols. I sat with these thoughts for a while until one day, while admiring the austere contour and materials of a dollar store toilet plunger, I realized that the tool could be upscaled in the same way as the Best Made axe and that Best Made's rhetoric would apply to the phallic plunger and also undermine the heroic narrative. [www.vimeo.com/80278488] This work began as an act of curiosity in remaking the Best Made brand video and then grew into a full company website and social media marketing as the video needed a home.

Because the goal is for viewers to form their own conclusions about artisanal plungers (whether they desire a $350 plunger or are appalled), it's important for them to encounter *Re Made* as a "company," rather than as an act of discursive design or as an artwork. I use the Internet as a site of distribution to enable browsers to happen upon *Re Made* as an ostensibly commercial site. My research for this work draws from a diverse range of sources, from consumer culture studies (the myth of the mountain man
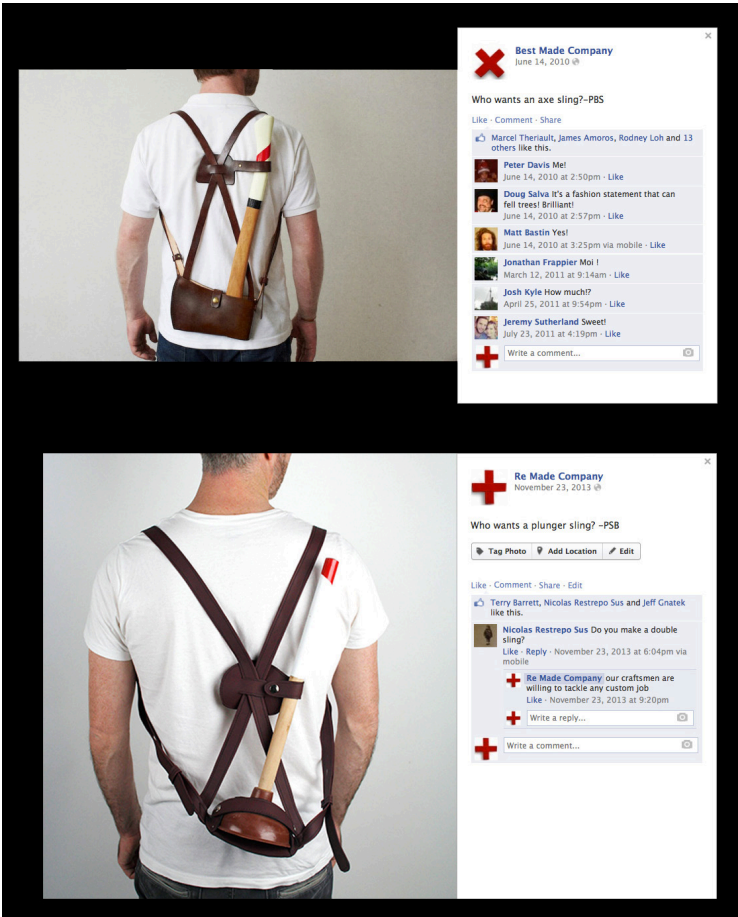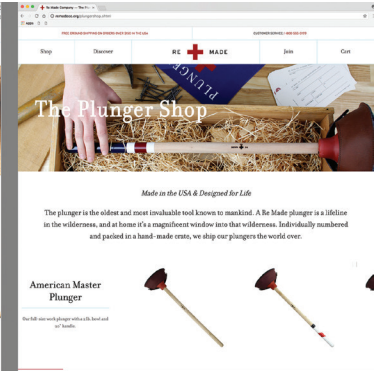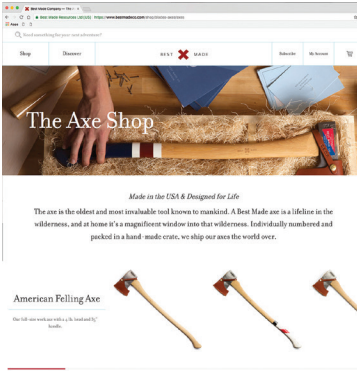
and heroic male figure; masculinity and the role of DIY projects and tools; the role of possessions as an extension of the self; the quest for authenticity; selling adventure; and images of the working class in advertising), economics (critiques of conspicuous consumption), and art as disruptive action (antagonism and relational aesthetics; culture jamming and interventionist art; and parasitism as a feminist tactic).

I've found that mirroring Best Made's language and images without exaggeration has produced a work that undermines the fantasy created by the axe company. My perception of "impact" is informed by the cease and desist Best Made's attorneys sent (and the conversations that ensued during the legal negotiations), the fact that the work has not been co-opted and absorbed by Best Made in any way, by the profusion of articles about *Re Made* (some describing it initially as "exceptional designed plungers" and then correcting themselves; others celebrating the parody), by analytics detailing a large and diverse group of viewers, and by changes made by Best Made to its site (the company eliminated the "adventure" stories about each axe and other overblown macho language).

As an artist, these are the types of works I make, analyzing, critiquing, and parodying brand messaging. As an educator, I encourage students to respond to commercial venues as potential

The RETHINK SHINOLA tour, a timed animation, is about to begin.
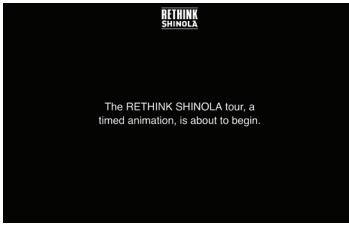
6:23 A.M.: SQUASH AT DETROIT ATHLETIC CLUB

Panis starts his day at the exclusive social club, playing squash with, in his words, "another leader in the community. That's what we aim to do, day in and day out, is to be part of this community."

6:40 A.M.: THE CONQUISTADOR OF DETROIT

Panis taunts his opponent: "I'm going to be spanking your ass." Panis conquers his opponent on the squash court, occupies the Detroit frontier, and even threatens the Swiss watchmakers who helped build Shinola ("we're coming for you"). Panis's aggressive language is symptomatic of the imperialism at the heart of Shinola.

7:00 A.M.: HANDSHAKE AMONG LEADERS

7:10 A.M.: WHITE HOPE FOR THE FUTURE

As the White settler, Panis sees this as "an incredible moment in Detroit's history ... a pivotal moment that we're going to look back on in ten or fifteen years and be proud of."

7:28 A.M.: AMONG THE HUNTERS

After a quick locker room change, Panis heads to breakfast, past the 18th century Flemish tapestry hunting scene, one of many artworks within the DAC reflecting conquest and aristocracy to its elite membership.

7:31 A.M.: BREAKFAST AT THE DAC

8:15 A.M.: THE WORKDAY BEGINS

Arriving at Shinola's headquarters on the 5th floor of the Argonaut Building, owned by the College for Creative Studies, Panis gets to work on his phone.

8:23 A.M.: SAYING "HI" TO THE GUYS

"Yo Dude!" calls Panis, greeting other employees and tossing around Shinola's version of the old pigskin, an individually hand-cut and sewn "rare overlap of sporting equipment and fine art," for sale online and in retail for $150.

8:51 A.M.: DUDE OF LEISURE

With his untucked plaid shirt and "dude" stance, Panis makes labor appear to be a benign hierarchy. In fact, Panis owns one of the most expensive gated mansions in Detroit's Indian Village and the company has distinct divisions between management and designers (the creatives) and factory employees (the workers).

9:06 A.M.: AN ELEMENT OF "CRAZY"

Referring to Detroit as the "wild West," Panis describes the "craziness" of Shinola's choice to set up camp in the 313, suggesting that Shinola asserted a new order over this supposed lawless city and elevated African Americans (former "night-time janitors" or someone with "a little side business") to advertise White men's products for the big house of Shinola.

9:21 A.M.: THE GREAT HOUSE OF SHINOLA

Throughout the day, Panis's mobility gives him license to wander. He's not bound to the desk we visited at 8:15 a.m. In contrast with the workers who are fixed in place, Panis, the entrepreneur, is ambitious, dependent on no one but himself, and a person who owns his own labor.

9:38 A.M.: CONTINENTAL SOLDIER OF NEO-LIBERALISM

Panis, one of a handful of White men in the heroic struggle to save Detroit, aligns creativity, battle, and personal freedom in ways that echo back to our nation's infancy and the "Blessings of Liberty."

sites of expression. In courses such as Shopdropping and Interventions in Commerce, students interject personal, political, or critical messages into retail stores, either covertly or by proposing themselves as artists-in-residence, in an attempt to reach consumers in the midst of shopping and to utilize the context of commercial products.

RETHINK SHINOLA [www.rethinkshinola.com] is a multi-part, Internet-based work analyzing and critiquing the Shinola company's brand messages. This designed tour draws attention to Shinola's representations of patriarchal whiteness that enforce perceptions of its "leadership" in Detroit and critiques its circulation of images showing Black employees being grateful for this so-called governance. Using images from Shinola's past and present, RETHINK SHINOLA makes the company's implicit messaging about White supremacy and labor hierarchies explicit by opening the curtains and recostuming the players. One part of the tour—the video *The Implicit Jacques Panis*—literally choreographs a series of hats on Shinola President Panis's head as he meanders through a staged "typical day" for a promotional brand video; he wears the explorer's pith helmet to describe the craziness of setting up camp in a city like Detroit and the man of leisure's top hat to wander through the office asking frivolous questions of people who are actually working.

Throughout the process of making RETHINK SHINOLA, I sent components of the work to artists, activists, historians, and marketing and communications scholars in Ann Arbor, Detroit, and nationally for review. During this process, we discussed questions, such as relevant histories of Detroit, the tone of the piece (scholarly or non-academic), and the nature of the critique on branding and patriarchal whiteness. Their feedback and insights throughout this process informed my understanding of the work's impact. Since the work has been live, many former Shinola employees have reached out to me to comment on the work and share their experiences of being exploited by the company. Many people have told me that they always felt uneasy about Shinola and that the work expressed that discomfort.

STEVEN MCCARTHY

Unbroken Record is a book that "undigitizes" an extended family's text and email messages over a year and a half as a mediation between privacy and access, archiving and forgetting, message and medium. Unbroken Record also has a series of vignettes titled *World Building in a Crazy World: Our Digital Crisis* by Jonathan Harris (used with permission) printed line-by-line on the fore-edge. Printed in an edition of fifty books, *Unbroken Record* has been exhibited in several juried venues and has been acquired by special collection libraries nationally, including those at Columbia University, UCLA, the University of Washington, the Phoenix Public Library, and Hennepin County Library in Minneapolis. The project was supported by a $5,000 grant from the University of Minnesota.

Wee Go Library is a mobile cabinet of 22 books altered through collage methods. The books were taken from Little Free Libraries in the Twin Cities metro area to comment on the notions of community, distributed networks, and the book as object and system. Each book is mapped to its donor library source and geographic location by a small pamphlet. *The Wee Go Library* project has been presented at the Political Imagination and the City: Collective Processes and Practices in Architecture and Design conference in Santiago, Chile, at AIGA Converge in Los Angeles, and published in the refereed journal *Communication Design: Interdisciplinary and Graphic Design Research.* McCarthy was also awarded the 2017 Minnesota Book Artist Award for *Wee Go Library.*

Project Binary is an artist's book in an edition of four that examines some of society's assumptions about binary relationships: social, political, religious, economic, gender, racial, and so on. Each page features a photograph of a person modeling a garment with people's faces and descriptive terms sewn onto it. The back of each garment has a slur literally cut into the fabric as an example of intolerance. *Project Binary's* pages are printed onto fabric, stuffed with batting, stitched into thirteen leaves, and bound with wood and metal bolts (fabric artist and apparel designer Anna Carlson assisted creatively and technically). *Project Binary* was supported by an Artist Initiative visual arts grant of $4,800 provided by the Minnesota State Arts Board. Two copies of the work have been acquired by the University of California (Berkeley and Riverside campuses), and it has been exhibited at the nationally juried exhibits *Project Passion and FL3TCH3R Exhibit: Social & Politically Engaged Art.*

After these visual introductions, conveners and participants discussed challenges and opportunities in various academic cultures regarding the perception of critical practices as design research. Strategies and ideas were shared and questions invited from participants (in the form of paper airplane queries, as a means of enlivening the format and encouraging levity!). The conversation focused on past and current critical practices and asked participants to strategize about the creation of potential critical projects and their uses. A secondary outcome was the discussion of venues for dissemination: in academia, opportunities for scholarship resulting from this form of speculative making are emerging but still not widely accepted as mainstream scholarship.

Select conversation questions
(handwritten, folded, and flown to conveners)

"In your critical design practice/work, where do you get the most insights: from the process, the end result or the critique from others?"

"Aside from the object, where are you drawing your understanding/ research from?"

"When you begin a project do you have a clear vision of the outcome or is it more explore and see what happens?"

"What's next? Where are the holes?" *(A hole was torn into the paper airplane.)*

"How are your research projects taken into the studio/classroom?"

"How do you evaluate the effectiveness of critical design?"

CONCLUSION

Critical practice has distinct processes and purposes that differ from traditional research; the creative process itself does not always follow a systematic approach. Nonetheless, this intellectual inquiry has the potential to create new knowledge. The critical nature of the conveners' creative projects aligns with an additional concept: *design hacktivism* (the hacking of existing design objects, images, experiences or systems through uninvited rearranging, modifying, or altering). "As well as the personal pleasure of making a unique or idiosyncratic product [through hacking], there is an

intellectual challenge in thoroughly understanding the intended rules of the designed object, then creating your own version according to your own rules."[4]

An additional intellectual challenge is in translating these critical practices, which embrace social and economic commentary, parody and satire, and an authorial or activist stance, into academic products deemed worthy of dissemination. Traditional venues like academic journals and exhibition galleries will need to expand their

purview to accommodate works of critical practice as scholarship. To help facilitate this, peer review must be done by *peers*: persons who understand the conceptual, strategic, and purposeful foundations of critical practice. This necessitates a community of design researchers that acknowledge the ways "[design] objects may carry the purpose of their inquiry"[5] and construct knowledge in new, exploratory ways.

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Engaging Design Students in Value Discovery as "Everyday Ethicists"

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ethics, values, pragmatist ethics, design character, design methods

In creating the not-yet-existing,[1] the designer takes on a substantial weight of responsibility not only for the present use of a designed artifact or experience but also the potential futures that these artifacts or experiences may potentially embody.[2,3] In this way, design activity can be viewed as always already being linked to social change, mediated through the character of the designer.[4] In this conversation, we seek to explore how design activity—in particular, the education of designers—might celebrate this ethical responsibility as a form of activism that inherently celebrates and embodies a certain set of social values while simultaneously excluding other possible social values. We advocate for a repositioning of the role of values and ethics in relation to design activity, seeing ethical concerns not as a constraint or barrier to action but rather as a generative driver of design concepts[5,6] through the process of value discovery.

Prior to participating in this conversation, organizers will ask attendees to identify and share resources relating to ethical or unethical design practices, including design methods or instructional tools that scaffold design students' awareness of ethical responsibility.

Possible outcomes include:

1) potential methods to encourage value discovery;

2) a description of pragmatist ethics in relation to design identity and character; and

3) connecting points for practitioners and educators in relation to ethics and values.

A CALL FOR ETHICAL RESPONSIBILITY

van Wynesberghe and Robbins[7] describe a new role for ethicists in the science and engineering lab, demonstrating how philosophical skill might be productively translated into design activity through the role of ethicist-as-designer. We draw inspiration from this shift, wondering how designers might be productively viewed as "everyday ethicists." This call for attention to ethics aligns well with AIGA Designer 2025,[8] particularly in relation to the "Core Values Matter" trend, and represents an important space for further attention. We envision ethics and values to be a central point of departure for design activity, serving a mediating role in the designers' judgments, and as an overall expression of their design character.[9,10]

In the past two decades, concerns regarding ethical behaviors have become increasingly central to design education and practice.[11,12] While ethics has become central to other disciplines such as engineering, at the same time many of these efforts tend to rely on consequentialist or deontological views of ethics that primarily seek to curtail or limit design activity. In contrast, we are interested in further developing a space for pragmatist ethics, recognizing the situationality and social complexity of design activity. Drawing from the pragmatist philosophy tradition, we wish to explore the potential role of the designer as activist and emancipator *through* the consideration of ethics in a generative stance.

POTENTIAL VALUE DISCOVERY PRACTICES OF THE "EVERYDAY ETHICIST"

Building on Verbeek's[13] concerns about the ethics that are inscribed into the artifacts and experiences that designers create, we see the pragmatist role of the designer as being revealed through value discovery *in the design* process *itself.* Thus, we wish to call greater attention to a range of potential value discovery methods that may reveal design possibilities, potential futures, and hazards in a generative stance. While a range of methods currently exist, such as value sensitive design (VSD) or Albrechtslund's[14] phenomenological expansion of Don Idhe's concept of multistabilities, most of these methods either tend to be overly prescriptive while not being resonant with the needs of designers in practice (e.g., VSD) or tend to be overly philosophical and difficult to enact (e.g., multistabilities).

CONCLUSION

We envision a substantial opportunity for identifying and developing design methods that encourage value discovery throughout the design process while remaining lightweight enough to serve a generative and constructive role in the hands of a competent designer. We anticipate that this conversation may lead to the identification of new candidate methods to reveal values and ethically related concerns, clearly positioning the designer as an "everyday ethicist" in their practice.

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Introducing Design and Play to the Realm of Intercultural Collaboration

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team-building, intercultural collaboration, cultural awareness, co-production

A CASE FOR INTERCULTURAL COLLABORATION

Our world is full of big, messy problems that will not find resolution by working from one narrow perspective. Professional and personal environments increasingly call for intercultural skills to better communicate across global organizations, work with clients in other countries, and foster friendships with international community members. Nearly 40 percent of respondents to *2014 U.S. Business Needs for Employees with International Expertise*, a survey of 800 executives in US companies, said that a "lack of internationally competent personnel" caused their companies to miss out on business opportunities. Although a range of academic disciplines in higher education are now introducing intercultural learning into their curricula, the need to present this concept to design students is especially important.

As producers of culture, designers have great potential to impact global understanding and influence trends in society. Opportunities for innovation are further enhanced when designers engage in intercultural collaborations and partnerships that involve "discourse, debate and even conflict."[1] However, many design students graduate without these capabilities due to a lack of international education, study abroad opportunities, or other types of international learning experiences. For example, in one survey of American study abroad students, only 2.1 percent (6,987) choose to study in the Middle East, compared to 54 percent (181,003) who study in Europe.[2] Along these lines, statistics of travel and tourism

also reveal a significant gap, with direct contribution to GDP in the Middle East (84.4 billion USD) as compared to the European Union (665.3 billion USD).[3]

Whether due to ignorance, prejudice, or media distortions, many Americans have come to see some countries in the Middle East as unsafe or unfriendly for them and do not often willfully travel to the region. Also, some American students feel limited by language, as a significant part of the US population speaks English; Spanish and French are the second languages commonly taught at the high school level.[4] This issue has far-reaching impacts for cultural philosophy, international relations, and beyond.

Extending these findings to the professional practice of design, the authors of this article conducted a qualitative study of design professionals across the United States to understand the importance of culturally significant ways of thinking and making. This initial study of approximately 20 design professionals underscored the idea that the practice of research-informed design and design-as-research is not a solitary effort and should acknowledge culturally significant ways of thinking and making. Respondents cited the need to support design research processes and outcomes by expanding opportunities for participation and inclusion to a more diverse set of constituents and designers.[5] Preferably, design-led research should involve constituents of all types and at every stage of this reflective practice. As such, this research advocates for design classrooms to serve as a laboratory to develop, test, refine, and iterate collaborative methods to prepare the future design workforce to excel at long-distance collaborations across the globe.

INTERCULTURAL INTERACTIONS IN THE CLASSROOM

Beginning in 2012, the authors used a grounded theory approach to progressively analyze and compare observations and student feedback from a range of directed intercultural interactions in the design classroom. In this space, the classroom serves as a testing ground to develop intercultural learning experiences between students located in the Middle East and North America. This ongoing research uses a constructive-developmental paradigm theory to frame how individuals understand their personal growth

and development over time and how this relates to others.[6] This pedagogical research aims to play a role in efforts to open up, decolonize, and become less biased, challenging design's roots in the Bauhaus and other primarily Eurocentric, male-dominated origins.

Findings from the authors' range of qualitative studies in the design classroom indicates a need for young designers to cultivate interpersonal competencies to work with global partners. The long-term goal of developing these skills as part of higher education is to help graduates navigate the international workforce and become responsible and respectful global citizens. While intercultural collaboration is not a fool-proof guaranteed route to innovation, it also has incredible value in shedding new light on problem-solving. At the same time, there are a multitude of challenges that can stand in the way of a team's desire to create something new together when learning to work across cultures.

During co-creation projects, students often struggle with soft skills that frequently cause a type of "positive friction" between students, including:

1) Communication
2) Accountability
3) Ownership
4) Evaluation and critique
5) Role assessment
6) Assigning tasks
7) Sharing and working with one another's project components (ideas, files, etc.)

The notion of friction in the classroom may sound uncomfortable, but this kind of "creative abrasion" turns out to be a boon for design teams. According to Hill, Brandeau, Truelove, and Lineback, increasing a team's diversity and differences can lead to innovation as participants work to "establish a marketplace of ideas to generate, refine and evolve a multitude of options through discourse, debate and even conflict. Potential solutions emerge from this process; they almost never spring complete from a solitary mind in a mysterious flash of insight."[7] But while research suggests that creative abrasion is an important ingredient in

innovative work, students do not always view creative abrasion as a positive force or route to innovation.

Many students view solitary design work as the key ingredient to creativity, struggling to see the benefits of working with a team, particularly if they have not experienced the benefits of collaborative-exchanges firsthand. Yet, when students are removed from the "comfort zone" of homogenous thinking, the opportunities to move beyond culturally driven expectations can help design teams innovate something completely new. This kind of mental flexibility involves learning to go with the flow, cope with change, and expect the unexpected. Mental flexibility also enables participants to see the potentials embedded in their cross-cultural partnerships and learn to adapt to their partners' ideas.

A promising area of research to help students develop mental flexibility is in the area of play-theory. "The whole idea of play is to give the player an experience without the danger that might normally accompany that experience."[8] Much like the challenges of building multicultural teams for co-production, Bernie DeKoven explains that an effective game "becomes excellent" because of the way all players engage with the game. This approach involves establishing shared guidelines and intentions to "play," empowering each other to establish new conventions and building safety and trust.[9] Like a well-played game, co-production has the potential to "become excellent" when it is created collaboratively by all team members.

In an effort to explore new ways to overcome common hurdles and friction points when working across cultures and distance, the next phase of this research explored how play might better support how design teams learn to work outside of their comfort zones (in terms of cultural differences, privilege, power) and deal with heavy topics (e.g., global water sustainability). The hypothesis for this phase of action research investigated whether new, engaging methods for creative co-production across cultures could enhance outcomes of collaborative and inclusive research-through-making.

CREATING GAMES FOR COHESIVE AND DIVERSE DESIGN RESEARCH TEAMS

This study explored how the elements of play could help diverse teams (students or otherwise) view creative abrasion as a productive

force rather than a destructive one. To do this, the authors engaged a small group of educators, practitioners, and students in the creative possibilities of game play as a productive tool for building and understanding collaboration in a session entitled "Let's Play Together: Creating Games for Cohesive and Diverse Design Research Teams." The session was highly interactive and hands-on, asking participants to work together to prototype an analog game based on the target areas identified in the authors' research, such as communication, accountability, ownership, evaluation and critique, role assessment, assigning tasks, and sharing and working with one another's project components (ideas, files, etc.). Beyond extending the authors' research, the goal of the two-hour session was for the games themselves to become tools for the participants to use in their own classrooms or research groups, expanding the generated ideas to make design teams more productive and inclusive.

Ten different tabletop games were available to help participants engage in the ingredients of *play* and *fun* in alignment with a specific topic of creative abrasion. The games ranged from Scrabble to Twister with each small group working together to integrate their

Figure 1: A group of educators, practitioners, and students engaged in the creative possibilities of game play as a productive tool for building and understanding collaboration in a session entitled "Let's Play Together: Creating Games for Cohesive and Diverse Design Research Teams."

Figure 2: A small group of educators, practitioners, and students worked together to prototype an analog game based on components of creative abrasion as identified in the authors' research, such as evaluation and critique.
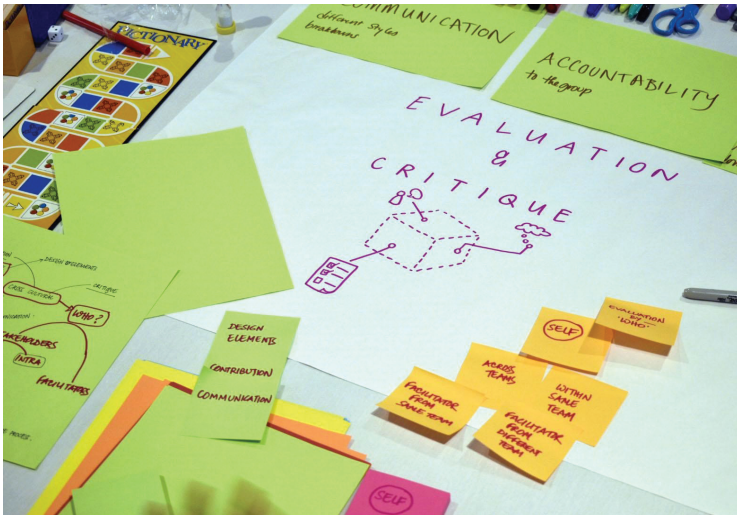

Figure 3: A small group of educators, practitioners, and students worked together to prototype an analog game based on components of creative abrasion as identified in the authors' research, such as assigning tasks.

chosen topic into a rough prototype. For instance, one game was dedicated to assigning tasks using a hacked version of Apples-to-Apples (Figure 2), while another focused on evaluation and critique with a hacked version of Pictionary (Figure 3). Throughout the process, facilitators reminded participants to consider how the role of power, privilege, and cultural identity might integrate into game play. At the conclusion of the activity, teams shared their final game ideas with the larger group and engaged in a group discussion of the outcomes.

Findings of the session indicate that *play* and *fun* can, in fact, serve as valuable methods to engage in design research-through-making, helping to redefine what it means for designers to work with students, faculty, community members, and other constituents. More specifically, participants shared how the activity helped them gain a deeper understanding of the ways in which game-based elements and principles could aid the work of multicultural design teams. This finding was particularly useful for participants outside of the educational environment, who noted that professionals often struggle to find new, engaging, and fun ways to improve their ability to communicate and collaborate across institutional, co-located, or remote cultures.

Overall, the session encouraged participants to see a broader value of intercultural collaborations facilitated in the classroom and professional workplace. The session was an opportunity to consider how to enhance multicultural capabilities and outputs using unique ideas, tools, techniques, and resources of playful design experiences. As such, play theory is a promising area of further research for expanding opportunities concerning who gets to participate in design research and diversification of the design discipline from a range of sociocultural perspectives.

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Discursive Design and the Question of Impact: Perspective, Pedagogy, Practice

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INTRODUCTION

What Is Discursive Design?

Discursive design—encompassing critical design, speculative design, design fiction, guerrilla futures, adversarial design, critical HCI, and others—is coming of age. This reflects a continued expansion of the field of design from beyond its commercial emphasis to socially responsible arenas, to experimental agendas, and now further toward particular intellectual outcomes. Design wants to do more amid an increasingly complex world of information, products, services, and systems.

Discursive design is an umbrella category—a type of genus with many critical, speculative, and provocative species of design (Figure 1)—that strive for audience reflection upon substantive topics, like childhood obesity, data privacy, and colony collapse disorder of bees, for example.[1] Discourses—systems of thought or knowledge—are embodied within or are engendered through designed objects. Although they offer some degree of utility, whether real or rhetorical, the goal is intellectual in nature (at least initially). It is based upon the premise that if design's primary goal is creating utilitarian objects, it should be user-centered. But, if its

Discursive Design

Adversarial Design	Dissident Design	Speculative Design
Anti-Design	Guerrilla Futures	Speculative Re-design
Contestational Design	Interrogative Design	Tactical Media
Critical Design	Radical Design	Un-Design
Design Fiction	Reflective Design	

Figure 1: Types of design within the broad category of discursive design.

primary goal is discursive, it should be audience centered. This is a sometimes subtle, but important shift involving design approach, dissemination, and evaluation.

The Challenge of Impact

Despite an increased presence in seminars and studios over the last decade, and even with specifically dedicated curricula, the many species of discursive design suffer from lack of supporting literature, organizing structure, and overall clarity. This is true with regard to theory, practice, and practice-as-research within the academy but also true for industry and other institutions that increasingly see its value. Now after about two decades of history, some current criticism of discursive design is that despite its intellectual aims, it does not know and do enough to achieve its goals of audience reflection—to have an impact or the intended impact.[2]

Discursive designers, it's been said, suffer from insufficient understanding of the topics they want to communicate and engender through their work. They should be more aware of the competing perspectives inherent in any complex topic and the ethical implications of the stances they take through their work. If not, they may be understood as "wrong," or can cause unintended and counterproductive consequences, or can be too easily ignored. Discursive designers are also knocked for not doing enough to effectively disseminate their work. They claim to (want to) affect audience reflection, debate, and social change but then merely place their work in elite galleries or in their online portfolios— "design for designers."[3]

And in research contexts, where discursive design probes stakeholder values, attitudes, and beliefs, there exist the typical challenges of achieving valid, reliable, and generalizable knowledge. Across both research and practice—and certainly within the classroom—implicit and even explicit assertions regarding insight and impact are prevalent, but designers can be found following strategies of hope and anecdotal assessment. It is also common, which may be even more problematic, that concern for impact is not even an earnest design consideration—discursive design is self-indulgent expression or "noncommittal aesthetic play."[4]

CONVERSATION ON DISCURSIVE DESIGN: VALUE AND IMPACT

Goal

Discursive design, regarded as an umbrella term for critical, speculative, and provocative species of design, enables practitioners and researchers to utilize design artifacts as intellectual and reflective interventions concerning substantive topics. While interesting perhaps, what does discursive design really accomplish? How does it serve and contribute; how might it better produce value? The objective of this Decipher conversation was to question and discuss the impact of discursive design inside and outside the classroom as well as a research-through-design practice and a tool for design activism.

Development

In addition to newcomers to the field, this Decipher conversation was enriched by designers (independent, corporate, institutional) who engage in forms of discursive practice as well as educators who have taught or are interested in teaching discursive design in their studios. Since it is relevant across most creative fields and artifact types, those who work with graphics, products, systems, services, and interactions were all able to contribute to the conversation.

To motivate the interest of potential attendees, a series of questions was made available online before the session took place:

- If discursive design is to be more than exercise or folly, to what extent should it be concerned with deliberately achieving certain outcomes?

- Following other more mature disciplines, is discussing and demonstrating impact and contribution key to its advancement and broader acceptance?

- If discursive design is capable of having any impact upon the world, how might we know? What is the role of research in assessing a project's outcomes, and more broadly, the field itself?

- If discursive design is understood as a potent tool, to what extent should designers take responsibility for its outcomes— good and bad?

- While at least initially discursive design focuses upon intellectual effect—reminding, informing, inspiring, provoking, and persuading—to what extent should it further strive for action and change in the world (the critical versus post-critical question)? Should it be satisfied with "mere" reflection and debate?

At the session, a propositional framework was briefly introduced to spark the conversation (Figure 2). Attendees formed small groups to discuss the value and impact of discursive design. Debates on the definition and nature of discursive design were intentionally excluded from the purpose of this Decipher conversation— attendees were encouraged to focus on the core agenda of audience reflection rather than unique distinctions across its many provocative species. The session was intended for the attendees to walk out with a clearer idea about the potential impact of discursive design, the importance of attempting or achieving particular results in the world, and its significance in design pedagogy and as a form of research.

Attendees participated actively during the session, working in small groups to facilitate engaging conversations about the impact and value of discursive design. Groups wrote down key concepts on easel pad sheets as they came up during the conversation. At the

Domains	Primary Impact	Secondary Impact	Tertiary Impact
Social engagement	Preferred thinking	Preferred action	Preferred social conditions
Practical application	Instrumental thinking	Preferred action	Preferred conditions
Applied research	Relevant thinking	Relevant responses	Actionable insights
Basic research	Relevant thinking	Relevant responses	New knowledge

Figure 2: Framework of the impacts of discursive design.

end of the session, two groups volunteered to explain their notes and insights gained from this activity. The easel pad sheets from each group were collected to identify relevant themes.

Emergent Themes from the Conversation

Inadvertent Discursive Design and Its Effect on Evaluation

A significant theme among the groups of attendees was the evaluation of discursive design outcomes. Attendees expressed a concern regarding unintended outcomes. They acknowledged that just as discourses evolve, a discursive artifact may end up affecting a population not originally intended by the designer. One group referred to this characteristic of influencing more than one population as *resonance*, which they associated with the artifact's impact. Another group used the label *inadvertent discursive design* to address this circumstance. Overall, the concern was directed more toward negative impacts than unexpected positive ones. How are these understood within an implicit or explicit calculus of a discursive artifact's worth or justification for its existence? What responsibilities or mitigative obligations might a designer have when faced with such outcomes? What strategies might help prevent them from occurring in the first place, or how can the messaging be constrained to the intended audiences when there are risks of misunderstanding or problematic contextualization? To what extent are unintended positive outcomes prevented when projects "play it safe" or are overly prescriptive?

Moving Away from the Notion of Archetypical Users

Intending the discursive design artifact for one specific population and expecting that it will only serve such a population appeared as a precept that discursive designers would need to be flexible about if they seek to engage in this practice. This circumstance has implications in design research and pedagogy as well. Discursive design urges researchers and instructors to think in evaluative approaches that are suitable to work with both intended and unintended audiences. As attendees expressed, the notions of success and failure are relative in discursive design.

Variable Impact as a Result of Multiple Audiences, Contexts, and Values

One key characteristic of discursive design that attendees identified and discussed is the notion of audience. Moreover, they discussed

how such a notion urges moving away from a specific user-centered design perspective. One group of attendees indicated that a discursive design outcome can not only affect a person but also an institution or even media. This group also underscored that discursive artifacts can impact vulnerable populations—a crucial issue that designers engaged in this practice should consider. Some attendees indicated enabling dialogue as a significant impact factor of discursive design as it initiates and sustains social discourse.

The notion of impact becomes complex in discursive design practice as it can relate to multiple audiences whether the designer intended to address any of them initially or not. Time adds up to this complexity. A discursive design artifact might differently impact different constituencies within a particular context. However, changes in the contexts of these audiences can also occur and value systems can evolve, which also can affect the impact. Some attendees considered the *definition of the argument* as a way to have some control on and understanding of the discursive artifact's impact across populations, contexts, and time. Attendees connected the notion of achieving impact with proper planning, which would comprise solid foundation, planning, and research.

DISCUSSION AND CONCLUSION

The outcome of this Decipher conversation indicates that impact is a significant element of discursive design. However, scoping impact can be a complicated task. As discursive design has the quality of addressing one or several audiences across time, there is a series of activities that are fundamental to evaluate the impact of discursive design artifact: 1) to focus on one particular audience and its characteristics, 2) to specify the period in which the artifact would be evaluated, and especially, 3) to determine the set of discursive effects and implications that are relevant to one particular research question from all the possible questions that are applicable to such an audience in such a period of time. The notion of audience in discursive design comprises not only the users but also the client and stakeholders. Furthermore, discursive design practices affect designers themselves,[5] especially when they intend the artifact to have a positive impact or perform an altruistic function.[6,7,8] These groups of people are considered not necessarily isolated or disjunct. The impact of a discursive design artifact can affect

different combinations of these groups, whose relationships and interactions can be defined through different periods and contexts. As the participants suggested, impact in discursive design is defined by the *who, when,* and *what*. The impact of a discursive design artifact has many evolving facets. Hence, it becomes relevant for researchers involved in the study of that particular artifact to identify and provide an account of the mappings between such facets to gain a better understanding of the overall impact of the artifact. In discursive design, overall impact is therefore understood and evaluated longitudinally.

The participants of the conversation mentioned that it is necessary to have a better understanding of impact in discursive design and investigate what evaluation approaches and methods from other design disciplines can be brought into discursive design. Just as the who, when, and what vary, so do the possible approaches and methods to be considered in each case.[9] Attendees of the conversation agreed that audiences might change their point of view because of either the effects of a discursive design artifact or other circumstances inherent to the context but outside the artifact's scope. This situation is present in other forms of socially engaged forms of design.[10] Researchers could see this as a hurdle. However, both design researchers and practitioners have a mindset and set of competencies ready to embrace and deal with ill-structured phenomena.[11,12] Notwithstanding that the *qualitativeness* of discursive design makes it a challenging research domain, this characteristic also speaks to the opportunities for investigations that can help discursive designers understand better the notion of impact in this field and how they leverage it as part of their practice itself.

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Parallel Narratives: Annotated Student Bibliographies toward a Broader History of Design

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Keywords
design history and criticism, design history canon, research-based inquiry, student-led research.

TEACHING DESIGN RESEARCH: CHALLENGING THE CANON OF WESTERN DESIGN HISTORY IN THE CLASSROOM

We co-teach an unusual design history curriculum at Cornish College of the Arts in Seattle. Our students spend two years (four 15-week semesters) studying human-made objects and the stories they tell about the times in which they were created. In the sophomore year, we teach The Western Canon, a class that provides critical discussion around the "hero-stories" about design and designers in the last three hundred years. Until now, that collection of hero-stories has served to give designers a cohesive identity, and we would be remiss if we did not tell our students these oft-told tales, although our teaching includes varying perspectives on that collection. The epic construct that is the codified history of Western design is our profession's *Nibelungenlied*, but we must understand that story in terms of colonialism, in terms of gender, in terms of Eurocentricity.

We agree that familiarizing students with buildings and posters and logos made in the last century by Western Europeans and North Americans is worth doing but only when seen through lenses of contemporary critique. When taught this way, students recognize commonly held notions about design history but question those notions.

In the junior year, the class unearths and examines stories that somehow got lost on the way to the commonly read historical

"canon" of the sophomore year. The junior level class, Parallel Narratives of Design, examines the work and lives and critical stances of those who shared time and space with the major hero-stories of Western (Eurocentric) design but never had the spotlight shined on them. Who chooses the stories we repeat? Who gets to say who's in and who's out of the canon? Who gets to decide what the parameters of design are? These are the questions we ask our students. These are the questions they answer for us.

Unlike some educative approaches, which would throw out the historical baby with the patriarchal bathwater, we are interested in our students deconstructing the current design canon, and we are interested in them creating space for the many more stories of making that have existed—unrecognized—during the ongoing disruption that is the industrial age. When mapped, these unrecognized narratives make our shared design history different. The proportions become different. The emphases are different. We create a richer, far more varied, intertextual, and relatable experience, a contemporary history.

Design history classes generally depend upon tried-and-true assignments like critical analyses, imitative student-designed posters (with the facts about the famous designer on the back), or the writing of research papers, heavy and light. Having assigned all of those things in past years, and wanting to keep things evolving for ourselves as well as for our students, we recalled Andrew Blauvelt's long-ago published annotated design bibliographies and decided to introduce an annotated bibliography project to our juniors.

Instead of trying to map all the important reading an educated designer should do—which Blauvelt's 1990s-era bibliographies did admirably—our assignment requires students to go narrow and deep.

The prompt:

> Who or what do you believe is missing from the canon of design history that you studied last year? Which designer did you want to see but not see? What movement or style did you wish we'd learned about?

That first year, we asked our juniors to research and create annotated bibliographies of 80–100 citations about a topic (and its layers of context) that they thought should be a part of our shared design heritage. We wanted these students to choose something of importance to them, so that their energy would fuel the long hours of their research. But we also wanted them to think about whether their interest truly should be studied by thousands of designers in the future. Was it big enough? Was it important enough? How did they gauge that importance?

We believed that finding a personal *hook*—a personal interest— would keep the assignment at the forefront of the students' minds as they researched throughout the semester. And we knew that the lack of a well-trodden research trail would force them over rocks and under low-hanging tree branches; help them realize the tenuous and often arbitrary decisions that alter the stories we call history; and teach them how complex, confusing, and murky academic research can be. We hoped to hammer home the realization that no story exists without context and that no history is a simple pile of facts.

Here are some topics they thought important to include in design history books:

In volume 1, students researched these topics:

> "Asian Female Designers"; "The Branded Image of Terrorist Organizations and State Propaganda"; "Design of the Tulalip Tribes"; "Hell on Earth"; "The History of Emoji"; "How West African Textiles Changed the Design World"; "Ivan Bilibin"; "José Guadalupe Posada"; "La Cubanidad"; "Leica"; "Rob Liefeld and Comics in the '90s"; "Sulki & Min"; "The Swastika, Paganism, and Mythology"; "Through the Eyes of Design"; "Tony Arefin and Associates"; "Women & Contemporary Calligraphy"; "The Women of the Taller de Gráfica Popular"

In volume 2, currently being edited, students researched these topics:

> "Amish Quilts"; "Appropriation and Fetishization of Native Women in Design"; "The Brinkley Girls"; "Chinese-American Visual Artists of the 20th Century"; "Design and Dyslexia"; "The Design of the Mexican Revolution"; "Designers of the National Parks"; "Duran Duran: The Band as a Design Brand"; "Female

Fairytale Illustrators"; "Female Game Designers"; "The History of ID Software: 1991–2013"; "Hospital Design"; "Iranian Design"; "Japanese-American Designers and Artists and Internment"; "Ojibwe Art"; Prism Comics"; "Satoshi Tajiri"; "The Underdogs of the Shoe Dogs"; "The War Over Animation"

In volume 3, being collected, students researched these topics:

"1960s Psychedelic Rock Poster Designers"; "Behind the Scenes of Ray and Charles Eames"; "Death in Design and Design for Death"; "The History of Pokémon"; "Icelandic Design"; "Japanese Women in Art and Culture (1600s–present)"; "Martial Arts in Video Games"; "Mary Blair"; "Monty Oum"; "Nico Marlet"; "Photography and Architecture of Mexico"; "Rubber Hose Animation and the Golden Era"; "Sara Little Turnbull"; "Susan Kare: Icon Design in the Graphical User Interface"; "Sophie Taeuber-Arp"; "Talavera Pottery"; "Transformer Artists Comics"; "Trinidadian Artist/Designer: Shalini Seereeram"; "Vietnam Propaganda Art: From the Indochina War to the Vietnam War"; "The Women of Knoll 1938–1980"

Because of these students, all of these topics have at least one comprehensive bibliography dedicated to their subjects.

We believe that this undergraduate research is a starting place for a mapping of a design history based on the interests and values of many voices. We've begun a publishing project to get this information to researchers looking for a starting place. The first volume of bibliographies, *Parallel Narratives: Annotated Student Bibliographies toward a Broader History of Design*, was published in June 2019, thanks to donations from the 94 people who contributed to our GoFundMe campaign. Although this is undergraduate-level student work, in many cases it is a first-ever compiling of stories and biographical material that have gone missing in design history. Aside from fact-checking the citations themselves, we have made very few edits. We feel that there is so little research in these areas that we must publish everything we can. The second volume of *Parallel Narratives* is due out in March 2019.

At the Decipher Conference in Ann Arbor, Michigan, we facilitated a conversation about inclusivity and student-led design history

research by presenting the outcomes of our student-led Parallel Narratives project. We centered our discussion around what one approach to a broader design history can look like, the benefits that we have seen from student-led research work, and ways to increase the scope of research in the field through collaboration.

When our research website is closer to completion, we encourage the participation of other institutions and have already begun to establish inter-institutional relationships that grow the bibliography archive online.

At the conference, interesting conversations began to emerge as faculty and graduate students from many areas of design naturally gathered in small discussion groups that continued long after the allotted time. Most productive was the overwhelming collective enthusiasm for change, expressed by many instructors stifled by the limited scope of current design history.

Also productive was an after-formal-discussion conversation with attendees about the definition of inclusivity. Was it to include gender, sexual orientation, and racial diversity? Or did it include all kinds of subject matter that students felt should be included? A session participant raised the question of whether the canon should be taught at all, arguing that students learn it by osmosis just by living in our current day.

All agreed that having more space in the curriculum for, more semesters devoted to, design history, was a significant piece of the puzzle. Overall, we found that presenting our approach to making design history broader got away from talking about what could happen—which so many history discussions dissect—and described what is happening, creating space for a pragmatic discussion about the real issues involved in creating a way forward together.

SESSION OUTCOMES:

During our session we distributed a survey to our participants: here are their responses. Since the discussion was so robust, less time was allotted for written participation than we would have liked. The results we received were helpful to our own post-conference review.

Q.1: Where does my curriculum fall on the spectrum of inclusivity?

> **Participant 1**: High, but there is always room for more. Accountability is important.

> **Participant 2**: Low.

> **Participant 3**: Western Canon.

> **Participant 4**: Growing inclusive…but not growing quickly enough!

> **Participant 5**: Needs work.

Q.2: What narrative is least represented by my curriculum at this time?

> **Participant 3**: Everything else [beyond the Western Canon].

> **Participant 4**: Anything without much literature in English— because it's the only language I read.

Q.3: What three narratives do I consider most important for my design history curriculum? How can I build from those toward more inclusive storytelling?

> **Participant 4**: That historical narrative itself is constructed is key to my curricular approach. "Modernism," its discontents, and its huge gaps—mapping this landscape with students (quickly, alas).

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At right: Scenes from Friday's sessions and events.

SATURDAY
PROCEEDINGS

DECIPHER

IN THIS SECTION

Re-dressing the Window: Defining and Establishing Best Practices for Authentic Multidisciplinary Graphic Design Research

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Keywords

multidisciplinary research, cross-disciplinary research, trans-disciplinary research, collaborative research, anti-disciplinary research, post-disciplinarity

INTRODUCTION

In recent years, a new paradigm in graphic design education has emerged, one that promotes cross-disciplinary work, learning through making, and design thinking.[1] Because the kind of work most graphic designers engage in involves others (e.g., clients) design educators must define and differentiate between cross-disciplinary design research and graphic design practice.

In practice, graphic designers constantly engage with individuals from a variety of disciplines. Through client-based projects, graphic designers navigate the push and pull between other disciplines with the goal of solving their client's problems or meeting the client's visual communication needs. In the best relationships, clients become collaborators, working toward the same goals. In the worst, the graphic designer becomes a "window dresser" or "pixel-pusher" simply reproducing a client's non-negotiable vision, words, and images.

The current trend toward multidisciplinary work as the newest (and perhaps most fundable) academic approach has cultivated relationships that approximate client-based work, under the guise of a grant or a funded study, but are not collaborative at their core. For example, a researcher from another discipline, in hopes of gleaning the skill sets of a graphic designer, will often add a designer to their grant proposal—perhaps going so far as to call them a Co-Principal Investigator—for services such as data visualization, publication

design, web design, or interactive design. The appearance of cross-disciplinary work is present in such an example, when the reality is that the graphic designer "window dresses" the work of others. This example does not seek to downplay the significance of the graphic designer's role in the visual communication of that material, but the question remains if the designer's involvement is, in fact, collaborative or truly crossing over into another discipline. And does one call this mode of working, or another like it, "multidisciplinary research" within the academic context?

Graphic design educators need to reach consensus on what constitutes cross-disciplinary research. The rush to cultivate a cross-disciplinary or collaborative culture across campuses has resulted in a muddling of the definition of collaborative research for the graphic designer, specifically, as our default mode of working is to collaborate with others. What, then, constitutes collaborative or cross-disciplinary research and is this (or should it be) distinct from graphic design practice? For example, does the work need to be free of client interest? Speculative? Grant funded?

These questions frame a complex problem that is systemic in nature—touching on many facets of the collaborative mode of working. For example, the landscape of institutional research norms (from public, private, research-one institutions, and so on) predicate a culture amongst faculty researchers that is different from one school, or even department, to another. The project framing itself also impacts the way in which a designer engages with multidisciplinary work.

METHOD OF INQUIRY

In order to address some of these questions, the author facilitated an activity session at the AIGA's Decipher conference, hosted at the University of Michigan on September 27–29, 2018. This session was composed of design researchers who work in both the academic and corporate spheres. During the session, the following questions were explored:

- What is the experience of multidisciplinary practice?
- What is the role of the graphic designer in a cross-disciplinary research project?

- What does an ideal multidisciplinary project look like for the graphic designer?

Sharing of Experiences

To delve deeper into questions of the designer's role, it was important to provide opportunity for participants to share about their current experiences with multidisciplinary work.[2] Through one of the conference themes, "Defining Design Research," the session participants were prepared to engage with the subject matter through a prompted dialogue. By providing this opportunity for reflection, participants were able to reflect on common themes within small groups and report out to a larger group.

Prototyping the Multidisciplinary Space

A generative activity was also provided that allowed the participants to prototype an ideal multidisciplinary space. The notion of "spaces" for collaboration was explored as a metaphor within the context of a generative activity. By asking the participants to draw a space for multidisciplinary practice, it allowed the participants to prototype a scenario that does not exist in real life.[3] Through reflection on the drawing of the space, the facilitator was able to encourage the discussion of roles, behaviors, and scenarios occurring within that space without miring the group in anecdotes from particular experiences (both positive and negative) previously discussed.

SESSION OVERVIEW: ACTIVITIES SUMMARY

The workshop format: Participants: 12 individuals, broken into 3 groups of 4; Facilitator: 1

3.1 Activity 1: Sharing Current Experiences

After a brief introduction to the session, participants were asked to dialogue in small groups of four to six people about their past experiences working on multidisciplinary projects. Participants were prompted to share their best and worst experiences relative to multidisciplinary work with other group members and consolidate their experiences into common themes. Poster-sized Post-its™ and sticky notes were provided so that participants could list these themes out collectively at their tables. After 15 minutes of dialogue, the groups reported out to one another.

Activity 2: Prototyping Ideal Multidisciplinary Space

After sharing their current experiences, participants were then asked to utilize the tools on the table to draw a "room for multidisciplinary research."

Participants were prompted with the following:
Using the drawing pad provided, in your groups, draw a "room for multidisciplinary research." This needs to be imagined as a physical space with specific function, e.g.: a sanctuary, panic room, kitchen, classroom, living room, dining room...

On the following presentation slide, participants were asked to consider some key questions while they worked in their groups:
How does "x" space promote multidisciplinary research? What is the designer's role in that space? (e.g., is the designer the priest? the cook? the learner? the teacher? the guest?)

At the end of Activity 2, participants were asked to report out by presenting the drawing of their space for multidisciplinary practice to the other groups.

SESSION OVERVIEW: ACTIVITY 1 RESULTS

Through Activity 1, common themes emerged respective to participants' experiences with multidisciplinary projects. These themes have been summarized from the group dialogue and blended with notes recorded from the Post-its™ written by participants. For the purpose of clarity and expediency, statements have been summarized by the author and organized under themes below.

Group Summaries of Experiences with Multidisciplinary Practice

Multidisciplinary Process

- There exists a bias from non-design disciplines about the design process (with regard to what a graphic designer can contribute to a project).
- There are expectations (from non-designers) about formal outcomes in what is an iterative design process.
- There is a lack of understanding about what design is.
- Developing a shared language helps groups to work together.

Multidisciplinary Team Dynamics

- You can't just take two different people from different fields and put them together.
- Interdisciplinary teams have a greater chance of success if they form a rapport/way of working together prior to meeting with a client about their project.
- You must develop an agile working and learning community, where people are more open to being in different positions or roles.
- Some projects are not *multi*disciplinary—where the lines between disciplines are less distinct—but rather "*multiple*-disciplinary." Individuals from different disciplines work together, but their contribution to the project stays within the bounds of their discipline. Other projects call for designers to take on the mantle of other fields and are thus more *trans*disciplinary.

Project Definition (roles, process, goals)

- Research projects tend to be more successful if there is a clear problem to solve.
- There is potential for graphic design being a surrogate for other disciplines (psychology, e.g.).
- Design tends to be layered onto another person's work in a superficial way and is not a conceptual collaboration. (This is not something that happens the other way around.)

Establishing Mindsets

- Avoid territorial attitude, grandstanding.
- Developing mutual respect and trust is important.

SESSION OVERVIEW: ACTIVITY 2 RESULTS

While discussing Activity 2 with the facilitator, participants reflected on the prompt and responded with the following question: *When* is multidisciplinary practice?

This question required the group to reflect on the time—within the scope of a project—when multidisciplinary practice occurs, versus individual, disciplinary-specific work.

The group also asked:

Why are roles important in the scenario? What about the role of the facilitator?

There began a discussion regarding how roles shift and change at any given point in a multidisciplinary project, depending on the framing and what the designer is being asked to do. Thus, the activity pivoted from addressing a single, ideal scenario within the space for collaboration to addressing multiple scenarios occurring at different stages in a project.

Prototyping a Space for Multidisciplinary Practice
Space for Multidisciplinary Practice: Team House

This group opted for a house metaphor to describe multidisciplinary practice. They named their team "Team House." The group began to visualize their space using sticky notes but quickly changed to drawing the space on the Post-it™ tablet. They started with a front porch, which was noted as a place to initiate and exchange ideas. Once inside, they envisioned a meeting space to interact with other group members, a library to reference materials, and the kitchen was a makerspace.
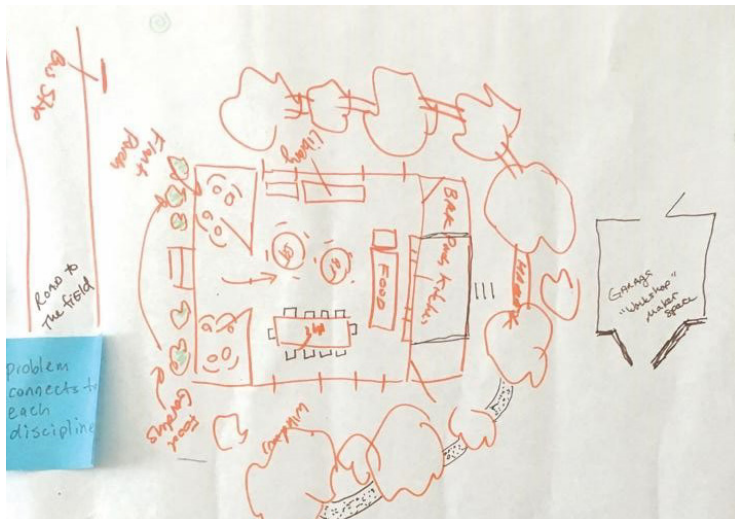

Figure 1. Participants' drawing of Team House

A back porch was envisioned as a place for rest and contemplation. It was noted that there would be a hammock for rest and a wooded area to take a walk in order to "reflect on things." A garage would also be a working space, albeit a more private one. They visualized that the house would have a second story but that would be off-limits space— not collaboration space, but rather a private space. It was noted in conversation with the facilitator that the second-floor spaces could function more as studios, where team members who have discrete skill sets or tasks would go to do disciplinary-specific activities.

The group elaborated on the metaphor to explain how they envisioned the house situated close to a bus stop so that the project team could travel to other locations easily for fieldwork and to interact with other individuals. The team reflected on the notion (when asked by the facilitator) that the house metaphor implied that the project team was a family. The team also noted that their house would be easily accessible to other houses, which might be used by other project teams (e.g., an engineer's house), and one might be able to go to their porch, front room, or garage to engage with them in a certain manner.

Space for Multidisciplinary Practice: Team Skylab Mission Control

This group chose "Skylab" as their team name. They introduced their concept by explaining how they thought about private versus public versus communal spaces. They imagined a space where different kinds of ideas are presented.

The group acknowledged that all projects are different, so they envisioned being able to call on Elon Musk to have a lab shipped out to space that was outfitted with specific capabilities. The group imagined how roles might change based on certain projects, so they were not disciplinary specific. They reflected how the shapes of spaces they drew may speak to the kind of interactions occurring in the space, for example their meeting space was round and their presentation space was a rectangle. They shared that breakout spaces were like little bedrooms. The group tried to envision opportunities for communal spaces. They recognized as university faculty, conversations and collaborations often take place in the hall in the "in-between" spaces.

One group member wondered where Skylab was located—was it really in the sky? The group had consensus that Skylab was meant
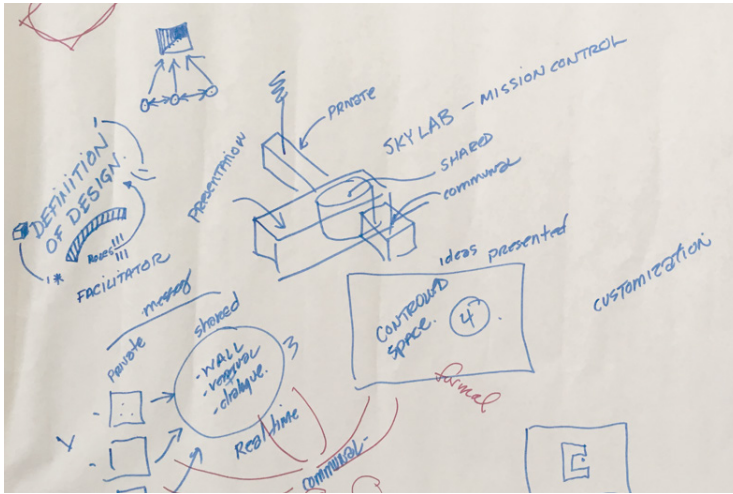
Figure 2. Participants' sketch of Skylab: Mission Control

to indeed be in space; although it was noted that if Skylab was indeed in space, it would be difficult to go outside (a reference to the prior group who had specific outdoor spaces designated for contemplation or relaxation). This would also change the group dynamics, in that it would be difficult to separate from your research team. It was observed by the facilitator that the Skylab was an extreme environment—a new frontier. The group responded that modularity was key to their space design—the ability to add on components and move things around as the project required. One participant noted a comparison to the Team Home space from the prior group—that one space was set in an extreme context and another one was about familiarity and accessibility.

Space for Multidisciplinary Practice: Team Kitchen

This group was concerned about roles and the connections and relationships between individuals in a group. They noted that oftentimes groups would gather over food to get to know one another, and this led the group to reflect on the process of getting into the kitchen to prepare a meal together as a model for multidisciplinary activity. The group used an analogy of a kitchen and the preparation of a fine meal. They utilized the sticky notes to prototype their idea rather than a drawing.
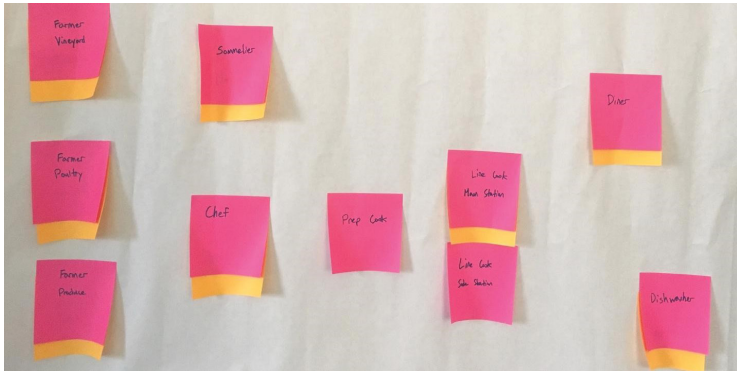
Figure 3. Participants' drawing of The Kitchen

They started with a discussion of food sourcing, for example, who might be the poultry farmer? Is this an engineer or a physicist? Is the farmer at the vineyard a market researcher? This group imagined that the chef who interacts with the farmer, and the person who connects all the moving parts, would be the designer. The designer/chef has to understand the whole process and work with all the other agents. The prep cook in this metaphor might be a research assistant. This group envisioned that the diner is the user of the product and the dish washer—who makes sure everything is clean—is the lawyer.

DISCUSSION AND REFLECTIONS

The session dialogue and activities allowed for a vigorous discussion about the various ways in which the graphic designer might interface with other team members when working across disciplines.

Activity 1 allowed participants to reflect on their experiences relative to multidisciplinary practice. Emergent from these conversations was the notion that definition is important: defining roles, mindsets, processes, project parameters, etc. Implicit in the definition of roles was that the graphic designer has a meaningful contribution to the established group dynamics. One participant reflected that often design was applied at the surface of a project as a veneer, but graphic designers did not get to meaningfully engage with a research project at the conceptual level. The need to validate the designer's role at the early stages of a research project became a clear theme amidst the conversation.

Activity 2 allowed participants to prototype a space for multidisciplinary practice. The spaces themselves were interesting metaphors: a home within a neighborhood, a space station, and a kitchen and offered new ways of reflecting on the roles and scenarios involved in collaborative work.

The Team Home space reflected the group's attitude that the group doing research had a pre-established, and close, relationship to one another. Roles seemed less important to this group as, within a family, who everyone is and how they are connected to one another was already known. The team members' roles—within the Team Home example—were secondary to the relationship. If someone didn't do the dishes, for example, another family member would shoulder that responsibility. Recognizing the relational focus of their example, the group also imagined a space to get away from one another. Through the outdoor spaces and the upstairs "studio" spaces, the imagined project time had individualized spaces.

Team Skylab imagined an extreme scenario, where they would be required to be set apart from others while undertaking their project. Setting the multidisciplinary space quite literally in space speaks to the perhaps-unusual nature of undertaking this kind of research within the academic context. One might imagine that while in a space station, spaces and roles and scenarios (an emergency landing plan, e.g.) must be clearly defined from the start of the mission. Everyone at the Skylab would have to have very specific tasks and responsibilities in order for the project to be successful. This reinforced the theme from Activity 1 that roles and project definition needed to be clearly defined at the outset of a project.

Team Kitchen reflected on how food played an integral role to connecting to one another (through shared meals, e.g.), and they integrated that idea into their prototype. The example of a kitchen (with a meal forthcoming) was the only prototype that implied an outcome. While Team Home and Team Skylab focused on the spaces and the roles, Team Kitchen focused on the components needed to get a meal from the farm to the table. The example underscored not just the roles but also the utility of those roles respective to the final outcome: who people were in the process and then what they contributed to the larger project. The concrete

nature of this prototype (respective to an extreme example such as Skylab) speaks to the pragmatism of clear role definition and the responsibilities inherent to those roles: if everyone doesn't do their part, the meal doesn't get put on the table.

CONCLUSION

There exists a need to continue to reflect on and define the nature of multidisciplinary research for the graphic designer. If graphic designers do not advocate to clearly define their role and contribution to a multidisciplinary project from the outset of their involvement, there exists the potential for their work to be merely surface to the conceptual development of a project. Through this session, participants were able to engage with the key questions posed by this paper in both a structured and unstructured manner through discussion and a generative activity. Both activities offered insights into areas of multidisciplinary research that merit further investigation. For example, in order to define roles and establish mindsets prior to a project, would it be useful to provide a toolkit or activity for project team members? What about the project team that is unfamiliar with (and thus needs to be educated about) what a graphic designer can contribute to the project?

Further research is needed to continue to address these questions as well as to learn more about graphic designers' experiences with multidisciplinary practice. It would also be useful, in future sessions, to engage non-designers in questions about the graphic designer's role in order to understand the ways in which roles may be better communicated and established between designers and non-designers.

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Designing Sensorial Dialogues

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DOING DESIGN RESEARCH

Designing with volatile, invisible, and intangible materialities needs
experiential methods. Through the experimental format suggestive
of "through research,"[1] in our previous collaborations, such as at
the Annual Symposium on Artistic Research in 2017, we proposed
various experiential setups and working scripts that were directed
by our constant dialogue (Figure 1). We want to investigate further
the potentials of designing through the speculative and embodied
method for design research.

With this proposal, we are addressing "doing design research"
for the experiential forms through our project. We are interested
in investigating ways of designing with invisible and intangible
materialities, such as light and smell, which as experiential qualities
are best explored through doing. The workshop proposed is aimed
at opening up questions in design spaces with these atmospheric
materialities using low-tech explorative and speculative ways.

We seek experiential forms that go beyond graphic and model forms in spatial design. What are the processes, methods, and materials to design with intangibles through the tangibles? For instance, designing with tactile surfaces of textiles through a smell, sound or light setup; referring to our workshop-performance "Staging a Smelly Atmosphere," we touch the "three principle types of experiential knowledge: explicit, tacit and ineffable."[2] The interactions with the materials become the tacit component, smells are the ineffable,[3] and the interpretation along with the representation of the practice is the explicit knowledge that is generated through our collaboration.

BACKGROUND

Our workshop proposal relates to the emerging design research that highlights the performative and processual dimensions of design practice and research[4] as well as embodied ideation ways, which are actually difficult to convey.[5] When working with intangible and invisible materials, visual methods become redundant. However, when combining embodied and experiential research methods with visual methods, there is a dialogue between the tangible and intangible materialities.

Through the practice, the dialogue emerges. "I shall consider designing as a conversation with the materials of a situation."[6] In this case, it is about not just the verbal dialogue between design researchers in cross-disciplinary settings but also the design process that allows materials and the ambient conditions to encounter each other in unexpected and unpredictable ways. It is also about the dialogue between the researcher and the materials in the space. As argued by Dyrssen, "Staging explorative experiments use invention, intervention and discovery as the main driving forces when setting up and actively examining specific situations. This may reveal the unexpected, repressed or hidden, and it trains the researcher in rapidly switching between associative and systematic thinking, to develop an intuitive precision and different types of logic."[7]

How does a researcher approach spatial design research with diverse materialities? What questions arise? As in Helgason (2016) regarding a speculative approach that initiates dialogue when working through different perspectives from various disciplines,[8] this workshop combines visual and non-visual design research methods that demonstrate a speculative approach to spatial designing. Also, to create atmospheric setups/models through the materialities that are invisible and intangible for spatial designing, we use design as a tool as suggested by Dunne[9] to generate ideas.

The common thread within any of the design fields is the visual methods of working. Due to application of different materials and different outputs, these methods vary and perhaps lead to creating boundaries within the disciplines. However, as Mitrovic and Šuran[10] argue, multidisciplinarity/transdisciplinarity thinking would allow dialogue and question these borders within the disciplines with a speculative practice. Can these dialogues become a design method or a communicative tool?

Figure 2: Visuals from explorations with light—surface interactions (indoor and outdoor).

WORKSHOP CONCEPT AND AIMS

The explorations within this workshop proposal deal with the visual, olfactory, and tactile senses. Through dynamic spatial arrangements with "textile artifacts," the intangibles become materialized. For instance, light effects obtain tangible boundaries in relation to surfaces in space (Figure 2).

Through drawing, sketching on paper, digitally or through scale models, it is difficult to grasp the intangible aspects of the space and their interactions. However, what if we are able to explore, represent, and articulate aspects like smells, light, and color through an embodied sketching, that is, doing research by

performing and staging with chosen materialities? The traditional spatial ideation techniques are challenged in this way through the immediate interactions with dynamic spatial arrangements, here being atmospheric setups such as integration of diverse shifting environmental conditions (e.g., changing lighting of a room, adding moisture, or changing temperature), characteristic bodily movements, and a variety of material props. In addition, we not only consider the more distant frontal or top view but also explore the inside and surround (various perspectives in 360°) in order to understand the atmospheric interactions of space and the "atmospheric expressions" that emanate. This is an opportunity to explore the potentials of designing with such analogue atmospheric setups in the context of computer-assisted design, human-computer interaction (HCI), and artificial intelligence (AI). It is also an opportunity to articulate the unseen and unrealized atmospheric qualities that require senses other than visual and also the multi-sensorial inputs that would bridge this knowledge to the latest technology for meaningful outputs.

With this workshop we invited the participants (designers and practitioners) to use a speculative approach to explore and negotiate the non-visual materialities of a space and to indulge in designing the sensorial dialogue with the body, materials, and space. The participants were expected to explore through embodied sketching using tangible (textile textures) and intangible materialities (smells and light) of the materials and space, respectively. Taking a speculative approach, the participants had to create and discuss the experiential setup. Our main claim for the relevance of this method and multimodal research display was that it enables participants to explore and discuss how designers arrange and express the intangible materialities as a part of the ideation process. In addition, such exploration can trigger a dialogue between materials and the designing environment.

WORKSHOP OUTCOMES

The workshop was attended by design researchers, designers (graphic and communication), writers, educators, a new media artist, and a cine-ethnographer. With this diverse mix of participants, the explorations using the intangible and invisible

Figure 3: Two "workstations" with textile materials.

Figure 4: Two groups explore the given materials through the setups.

materialities for spatial design concepts made for an interesting workshop. The materials to be explored in this workshop were smell and light for spatial design research. The materials and setup was new to all of the participants; however, they were highly intrigued and motivated to explore these materials. There were two groups formed; one group had a focus on the smells, and the other group focused on the light (Figure 3). Both groups had textile materials that were either treated with smells or had inherent smells and were light reflective or light emitting, respectively (Figure 4).

The group focusing on the smells started exploring the smells of different materials at hand (Figure 5) and created their own understanding of this material through the iterative process of combining the smell materials in layers or creating a pattern by placing them in a certain sequence. The group speculated on the
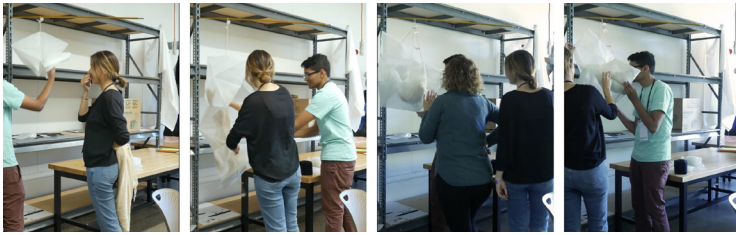
Figure 5: Group exploring with smells.

Figure 6: Presentation of the setup with smells.

ambient conditions, like air, that would add movement to the smells in space. They created an experiential setup with a narrative of "Smellengers (Scavengers) Hunt." The concept was focusing on the olfactive sense; they provided olfactory stimuli to bring about the associations and memories through selected smells which in turn would trigger the imagery/visuals in the mind even if the visual stimulus for these situations was missing.

The concept developed by this group speculated on smell acting as a trigger to other senses, especially the visual sense. Chosen smells by the group helped them correlate with their own certain memories. Even in absence of any visual stimuli for this memory, they could recall detailed imagery and visuals triggered upon smelling. This speculative concept fits into the goal of the workshop in that the experiential knowledge through the smells in a spatial design setup creates a sensorial atmosphere (Figure 6), and the

Figure 7: Group exploring with light.

Figure 8: Presentation of the setup with light.

dialogues in the form of nostalgia connect to a space and time from the past memories.

The second group focused on light as the main element to create atmospheric expressions; the sensorial dialogue essentially happened between the designers and the experiential setting they built (Figure 7). The group worked in synergy in a particularly expressive way. In the short time given for the explorations, they combined textiles with different properties and distinct light sources through rapidly sketched shapes and structures and with little verbal communication on what the setting was supposed to be about and look like. The emerging remarks were about the unfamiliar material surface qualities, textures, and effects. The

key element of the installation got the name of the "robotic light arm" or the "probe." It was meant to be manipulated, in contrast to the rest of the structure that was a static arrangement of textile surfaces and other light sources. The group also explored with layering of materials in relation to varied depths of the installation. The outer layer surrounding the setting—a semi-transparent fabric wall—was given distinct perceptive qualities by adding a colored filter on one area. The setting alluded to a puppet theater: the group mentioned the messy playful aspect of it and invited others to animate it with the light arm (Figure 8). During the exploration, light sources would be put in different places, turned on and off, thus creating shifts in the surface expressions. Therefore, the dialogue between the setting and the ambient conditions was also present, however not much pronounced, as the ambient lighting situation did not suggest several modes.

At the end of the workshop, each group created an experiential setup: olfactory artifacts and visually stimulating artifacts in relation to light, respectively. By doing these explorations in a three-dimensional form while dealing with the different materialities, the concepts brought in diverse viewpoints of each participant.

Workshop participants were expected to get an understanding of how to capture and demonstrate the embodied research process through the performative workshop format.

We also invited them to experience a method to tackle sensorial aspects of spaces (light and smells) in a design process and to use multimodal techniques to explore, represent, and design varied sensory expressions.

By emphasizing the experiential knowledge through the tangible and intangible materialities at the forefront of designing, the research process becomes more situated. Usual ideation processes start with the concept proposals and essentially verbal and visual communication. Participants could bring in their individual ideas in a dialogue through this experiential setting to support the narrative, which, in turn, helped them rephrase and have another perspective in putting their concept forward. We can summarize that this performative-workshop methodology has a potential to be a part of the ideation process within the design research.

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Unpacking Context in Design Research through Orality and Narrative Inquiry

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KEY QUESTIONS:

What relationship do memory and narration have in understanding and de-constructing a context, considering contextual inquiry or understanding forms an important basis of design education?

Are there inter-connections between oral history and design research, considering both have elements like interview, context, people, and narration and both value memory as a site of knowledge? Can oral history be sources of narratives that constitute the heritage of a landscape—an essential component in understanding, interpreting, and looking after the heritage with the knowledge of the heritage, from an insider's point of view and memory?

What can be some guideline or "frames of reference" from which researchers and practitioners can work in order to enhance collaboration, inclusion, and emancipation in research relationships while facilitating participatory approaches, especially when a researcher considers participants as actors in research, which is a shift in perspective from doing research "on them" or "for them" versus doing research "with them"? In that context, can multiple participant narratives be presented where the readers can interpret and analyze them as opposed to the researcher adding interpretations along with the actual text?

Design research being inter-disciplinary or trans-disciplinary in nature, how do a variety of research methodologies, especially in terms of how the research questions are formulated, situated, and inquired, inform and enrich that?

As a design and art educator, especially someone teaching design research to aspiring designers, these are some questions that often chase me. This is because in art and design education, contextual learning plays a major role, and very often the inquiry that leads to understanding of the user, process, product, or environment of research is situated in a context. Because some of the key aspects of design involve adaptability, complexity, trans-disciplinarity, problem framing, systems approach, and empathy, it becomes limiting to use fixed frameworks of research, which often become prescriptive and hence normative and restrictive, while doing design research. I wanted to explore if bringing in a multitude of reflective, reflexive, narrative, dialogic, and discursive elements, if inter-connecting different kinds of research methodologies, make design research richer, deeper, more relevant and contextual.

These were some of the questions that I intended to explore in collaboration with my audience.

INTRODUCTION

In this activity group, I intended to design an environment that would facilitate the exploration of a few inter-connected and inter-related ideas and resulting insights that I had generated through my work as a design educator, design researcher, and pedagogue. I planned to construct visual conversations around an interesting methodology in teaching and doing design research: the intersections of orality, narrative inquiry and design research, and orality and narrative inquiry as a pedagogical tool as well to approach design research. There were triggers given in the forms of case studies generated out of or as a part of my own research, teaching and practice, quotes from existing literature, related ideas, provocative statements, and probing questions, which were then inter-connected and inter-woven through an active facilitation.

The idea was to explore how learners observe, document, and examine; how they decode the meaning of the multiple forms, objects, subjects, and contexts of storytelling; and how then they create newer forms while doing design research. More important, how can their processes be unpacked to showcase a bigger learning that educators can learn from?

Figure 1: Collecting information, insights, and narratives from the family members and neighbors of a community of inter-generational performing artists who are also farmers, in a village in Central India, as a part of a contextual inquiry course. The idea was to understand the community better in order to gain insights about their artistic practices. Photo by Sudebi Thakurata.

SETTING THE CONTEXT

Defining Context and Orality

One of the dictionary definitions of the term *context* is "the whole situation, background or environment relevant to a particular event," where context is indicated to be a complex set of factors through the phrase "whole situation." In a way, context is an element surrounding its members in a continuous presence, implying that context is "complex, multifarious and enveloping" with multiple aspects. What is also important to keep in mind is how an aspect is determined by the particular situational factors that are studied and the way in which these elements are interpreted. Context in this case is not seen as an "additive influence of discrete entities but rather the simultaneous interaction of a number of mutually influential factors."

Figure 2: Seeing people and process in context: students understanding the processes involved in one of the distinctive styles of Kalamkari, a type of hand-painted cotton textile, in Southern India as a part of a course that involved understanding systems around the textile industry in the state of Andhra Pradesh. Photo by Sudebi Thakurata.

It has also been argued that the focus in research methods often is on where and how researchers view reality and evidence, particularly the value of evidence. In this process, often the context from which the evidence is gained is overlooked.

The case studies which were used in this activity group were from a collection of design-led and design-driven research narratives. I used the case studies as narrative devices or provocations to allow people to think, trigger conversations, and initiate discourses. In this, oral history and life stories were used as pedagogical tools

of contextual observation, analysis, reflection, interpretation, and storytelling. The examples were from processes that had been mediated by orality, where the design of learning delved into the sociocultural-historical dimensions of a context. The case studies were not presentations but representations of some of the shifts that an authentic design research might be able to achieve. The premise of this work on case study research is the need for ways of understanding how people behave "in context." Conversations around the evidence existing in the case setting also were abstracted and collated, and eventually the attempt was that all the located evidence would be interwoven into a narrative account. The last part of weaving the findings into a narrative account was not completed during the activity group, due to lack of time.

Figure 3: Collecting oral stories in Central India, Malwa, to understand the sociocultural context to unpack the meaning of songs that are passed down through generations amongst folk singers. Photo by Sudebi Thakurata.

However, eventually the focus was to unpack the word *context* in design research through these examples, experiences, expressions, and explorations and to also collectively ideate about possible ways of leading designers to navigate within this complexity. This is particularly important considering the ever-changing contexts of people in the present and future and the various complex relationships and interactions that exist within a given context.

Narrative Inquiry

It is said that in narrative inquiry, narrative is used both for collection and representation of data, which are created and revised by the researchers in collaboration with their subjects. Interestingly, narrative becomes both the method and the content of the inquiry.

Figure 4: Participation in design research. Photo by Sudebi Thakurata.

It allows one to study one's own experience as well as those of the other people. It also helps to explore people, place, and context with the understanding that action and beliefs are grounded in personal and cultural histories and cannot be inquired in isolation. In this process of inquiry, the inquirer and the objects of inquiry get intertwined, both at the level of data gathering as well as the evaluation of the data. Narrative accounts are constructed collaboratively with the participants, where interview data is supplemented by participant observation written in a narrative style. This interpersonal relationship, along with an attempt to understand not just the people but the context, is an important aspect of design research as well.

Participation in Design

In a bid to make design more usable and acceptable, the significance of user involvement in design activities has been recognized, and for quite some time the idea of *participation* has been considered critical in the realms of design research, especially in cross-cultural design.

The proposed theme of unpacking context through orality and narrative inquiry, therefore, becomes relevant in thinking about developing contextually appropriate and consensual methods in design with communities.

STORY AS AN ESSENTIAL SENSE FOR THE CONCEPTUAL ECONOMY

In his book *A Whole New Mind*, D.H. Pink outlines six fundamentally human abilities required for professional success and personal fulfillment and also at greater length expands each one of them. The author mentions how from an agricultural age characterized by farmers in the eighteenth century, there was a shift to the industrial age characterized by factory workers in the nineteenth century, which then shifted to the information age in the twentieth century characterized by knowledge workers and in the twenty-first century the shift has happened to a conceptual age characterized by creators and empathizers.

In keeping with the idea outlined by the AIGA Designer 2025 summary, this understanding is particularly useful, as the shift has

already started not just from an industrial economy to a knowledge economy but from a knowledge economy to a conceptual one.

The shifts from a knowledge economy to a conceptual age demand shifts from a narrowly reductive and singularly analytical approach of life. What is intriguing is the idea of looking at the whole over an only right-vs-left-brain kind of dichotomy, which isolates one from the other, whereas in most realms the two work in tandem. The proposal of Pink's book are six specific high-concept and high-touch aptitudes that the author has called six senses and has deemed essential. These six senses are *design, story, symphony, empathy, play,* and *meaning.* It is very interesting to see story being introduced as an essential sense in a conceptual age. The idea of story in this case is introduced in contrary to just arguments, in a time where there is no dearth of information and data, where there is always a counterpoint to every point made in an argument. What is of importance is a compelling narrative, where "the essence of persuasion, communication and self-understanding" are necessary. Story as an indispensable component to guide our

Figure 5: Doing a family profile. Photo by Sudebi Thakurata.

lives and shape our world, interestingly, like the other five senses, certainly is a fundamental human attribute.

My idea was to bring in dialogues on design research with other related methodologies like orality, narrative inquiry, ethnography, contextual inquiry, and many others by using story as a thread to inter-connect.

In keeping with the ideas of the web of life, as expressed by Fritjof Capra—of a new perception of reality, of not trying to understand anything in isolation, but in a systemic way, through a holistic worldview, which sees the world as an integrated whole over a dissociated collection of parts, the idea of the "ecological view"— context in design or otherwise also demands an "ecological" view embedded in deep ecology. It is mentioned in this work that the essence of deep ecology is in asking deeper questions. Narratives in their construction and de-construction have inquiry embedded within them which makes an ecological understanding of the self and the world; narratives have the power to not just be a site but a mediator of creating the relevance by connecting the isolated parts, by being the missing piece.

This is particularly important in spaces and places, which have a predominant oral culture or a process of meaning-making that is laden with narratives. So understanding the context of people, in these cases, cannot happen in isolation without understanding the context, one that is also essentially oral in nature, without delving into the aspects of inter-subjectivity and orality while data gathering, data analysis, data interpretation, and data visualization.

As a design educator, narrative designer, and research practitioner, I have noticed various things that are possible through, with, within, and by stories/narratives. Stories help one to embody characters that are significantly different from our own "selves," allowing diverse and points of view being embodied and therefore perceived. This also leads to greater empathy by enabling one to step into the shoes of characters that one otherwise would not live as, in settings one otherwise would not have a chance to experience. One can relate to narratives as the teller or the listener of the stories. Stories build perspectives, allow multiple and sometimes contrasting interpretations, analysis, synthesis, and most

important, allow one to observe oneself while observing others. Last but not least, stories can enable action along with awareness and awakenings, and often the action happens within the form of self-actualization or healing.

FACILITATING CONVERSATIONS THROUGH OBSERVATIONS AND VICE VERSA

Can orality be used as a pedagogical tool to gain empathy toward the teller, bring awareness of the subjectivity of the listener's perspective and the inter-subjectivity of the retelling?

As mentioned earlier, I used pieces of work produced while learning art and design as triggers; through these triggers I could make processes related to learning visible and hence provoke and facilitate conversations around them in teaching design research. Considering that there is no human experience that cannot be expressed in the form of a narrative, I strategized to use narratives in my inquiry as a method of data elicitation. As a part of this I also wanted to show/use oral history as a reflexive and reflective tool of narrative inquiry.

THE ACTIVITY GROUP PROCESS

The activity group began with blocks of texts from different academic papers on some of the related themes and given to all the participants. Triggers were given through ideas, quotes, statements, and questions in these chosen texts, and people made quick annotations on them. The participants made notes of their insights and inquiry while reading the texts, which went onto a growing wall of ideas and perspectives.

After this, the case studies from India mentioned above were introduced to them; each participant sat in small groups and read different case studies from the anthology authored by me. This led to a provocative café conversation, where the participants identified questions and important statements by locating inter-connections amongst orality, narrative inquiry, design research, and other forms of research as well in these case studies. They were encouraged to bring in their own lenses of interpretations and analysis while understanding the contexts mentioned in the case studies. At this point they also attempted to connect dots by formulating insights through questions around the future of design vis-à-vis AIGA
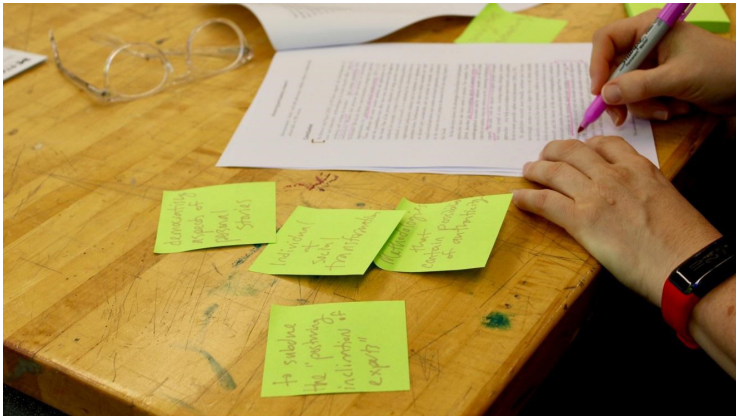
Figure 6: Annotating important and interesting parts from selected excerpts from existing literature and trying to identify if the theory resonated with one's existing practice in design research.
Photo by Denielle Emans.

Figure 7: Activity group creating a wall of perspectives.
Photo by Denielle Emans.

Designer 2025. My chosen topic attempted to address the themes/ trends of complexity, core values matter, and new forms of sensemaking in the AIGA Designer 2025 document.

The participants had been given some time to go through the wall that had all these insights, questions, statements, connections and had a discourse on many of the themes.

Figure 8: Connecting the literature with case studies shared in the activity group and adding personal insights and inquiries. Photo by Denielle Emans.

Figure 9: Wall of insights around orality and narrative inquiry in design. Photo by Denielle Emans.

Figure 10: Making a booklet of insights. Photo by Denielle Emans.

Figure 11: Synthesis. Photo by Denielle Emans.

They also formed smaller groups with the purpose of inter-connecting idea, imagination, interpretation, inspiration, and representation through some kind of visual mapping and creation of a handmade booklet that can be further explored to construct knowledge and develop insights. The form of the book was supposed to be guided by the content. This was done in alignment with the idea that design processes are often a way to synthesize form, function, and aesthetics where the form is driven by the content or the meaning. However, in some groups the final form of the booklet did not get completed, even though the content that would go inside them was done, synthesized through generative scribing of conversation mapping.

During the activity group, I chose to act as a curator of conversations and ideas, as a facilitator. The way the word *curation* is used, meant, and understood here, nevertheless goes beyond the dictionary definition of it. Curation in this case is a process of meaning-making that allowed me to pause, see, think, reflect, collect, sieve, connect, inter-connect, and synthesize to construct a new whole from the old parts. Storytelling, design, systems, and pedagogy intersected through the facilitation and later were interwoven to form newer interpretations to construct new knowledge.

One of the intended outcomes was also to view my own case studies and hence experience their context through the lens of design educators across the globe.

THE NATURE OF THE CASE STUDIES USED AS TRIGGERS

The case studies were taken from a curated anthology of narratives called *The Archival City: A Site of Learning.* As a pedagogue, I had sculpted the narratives out of the reservoir of stories that the city of Bangalore, India, had to offer when students of various disciplines of art and design explored the "city as a text" as a part of their learning journeys designed and facilitated by me. The narratives had been gathered over the past few years from many courses I had designed and facilitated at the design institute where I teach. The courses had different participants and had different themes, focuses, and objectives, with different kinds of capabilities to attain and different forms of explorations that the processes would lead up to. The stories were not the aim but by-products or

sub-texts of significant parts of the processes, hence they were not limited, either by imagination, assumption, interpretation, or the compulsion of being an end, a product, or an outcome.

The city turned out to be like an archive waiting to be discovered as the inquiries became more layered, nuanced, genuine, and complex. Interestingly the city was not just one archive but the amalgamation of a multitude of archives where the lines between the spectators and the spectacle, the subjects and the objects, the observed and the observers became blurry, with each audience member accessing the archive becoming a curator, and each curator being a part of the archive itself. Design research, ethnography, contextual inquiry, oral history, and narrative inquiry, different kinds of methodological inquiries intersected, inter-connected, and were inter-laid as the sub-narratives formed the meta-narratives.

While delving deep into the innumerable accounts I had to choose from, I chose to look at them from the lens of pedagogical design that located, fostered, and inter-connected narratives from the city. In the process of inter-connecting the narratives, an "archive" became woven with the lived experiences of people who inhabit the city. The pedagogical design also inquired deeper into the role that art and design play in creating learning through the city as a multi-layered text.

As I started sifting through the various works done by the students, what I began to get more and more drawn to were not the stories collected but the vantage points from which they were framed. How the narratives have been seen, felt, and constructed by the students was more intriguing and eye-opening! In a way the streets became an archive of their personal quest to make sense of the seemingly complex city that they have come to visit. I could experience how a place acts as a canvas to paint what is out there, with the colors of one's perspectives. It was a new way of looking at the old, a unique urban pedagogy that began to emerge.

I decided to focus on these questions more than the stories as I felt that they have more pedagogical possibilities and will make people think and be inspired. In these transitions of making sense of the outside, how a young adult starts making sense of one's self is what I feel is a more gripping narrative.

That way this is an anthology of one's location within a place, one's disposition within the geo-cultural positions within a city, the inquiry that leads to insights and the insights that lead to more inquiries. To me these examples were very potent in acting as conversation starters on design research with respect to narratives.

THE INSIGHTS

Almost everyone found the examples both relatable and eye-opening, allowing them to delve deeper into the ideation around design research. Most of the participants also concluded by saying that instead of a standard methodology of doing design research, a multitude of research methodologies from different disciplines when borrowed, contextualized, and interconnected can make the process of design research stronger, and in all of these methodologies of research, "narratives" become a common thread that underlie the approaches.

An affinity mapping of the many ideas and perspectives that were generated through this process led to a few key insights on the following themes with respect to research done during, for, and in design.

Conversation and Observation: A Shared Language

Conversations form a very important aspect of any kind of research, and design research is no exception to that. A question came up in the activity group regarding the relationship between language (of the researcher and the researched people) and the context in which the research takes place, giving rise to possibilities of conversations. While most people agreed with the advantage of knowing the language, in which a conversation can happen not just at a functional level but at the level of sensemaking or deeper interactions, people also took into consideration situations and hence limitations of not having multilingual researchers. If in places where one might have to do research a language unfamiliar to the researcher prevails, whether the researcher cannot do any form of substantial research was a point of discussion as well.

But soon the conversation moved toward redefining the power of language in which often the shared language might not be a textual

or verbal one but one without or beyond words. In that context, the meaning was more important than the words, and the meaning-making was not just limited to the interpretation of the mere words.

The idea of the narrative and stories in multiple forms as carriers of meaning seemed crucial in these contexts. People also mentioned that orality demands interpretations, plurality over singularity in interpretations, and also brings in empathy in a deeper sense by allowing multiple perspectives.

In connection with meaning-making, the importance of understanding the subtexts or underlying layers of meaning in the language in which narratives are received or collected becomes important. Hence there is a need of "immersive observation" as mentioned by the participants. It was concluded that observation and conversation go hand in hand, and deep immersion in a context allows for both to happen at an interrelated and interdependent way where observation helps in overcoming limitations in conversations, and the power of conversations help overcome assumptions arising out of observation. At this stage, some of the participants brought in the term *exchange* instead of *conversation*. It was said that the power of a shared common language—in a broader sense of language—enables deeper and more meaningful exchange, and once the exchange happens, it moves beyond conversations. Then different kinds of exchange start taking place where the initiation of communication of meaning happens as one starts making sense of the message. Once the meaning becomes shared, the language of the sharing of it in the form of research cannot restrict this sharing just because of a language barrier. The story finds its way out in different ways through the researcher. This is the point that a design educator should be emphasizing while teaching design research: a blend of ethnography, orality, and narrative inquiry or any other methodologies of research strengthen the processes of design research. Even usage of one's own words instead of the exact words of the people who are participating in the research as users do not make the design research inauthentic as the meaning is not lost.

Without reflection and a journey between the parts and the whole, the research remains incomplete. Hence contextual understanding

in research allows one to notice the micro in great detail while also understanding the bigger picture, and this complexity can be navigated through the research with the help of narratives.

While doing research using narratives, one needs to be aware of emotional involvement in a context and also be conscious about democratizing aspects of personal stories. Learning evolves when the researcher discovers what is too personal and what can be sieved from that. Recording of not just the perspectives through the stories but also one's own shifting perceptions through the exchange brings in real empathy.

Outsider, Insider?

How does the idea of together/alone impact research, and what are the factors that govern this? This is something a researcher needs to think about. Because any community is a huge system of give-and-take, one needs to understand one's position and its pros and cons as both an "outsider" and an "insider." Being a participant in a context does not make someone an insider, and it is not always true that only an insider has all the necessary insights. Hence rather than forcing oneself to be an insider, being authentic, sensitive, sensible, and aware of one's position make research more ethical. Another important aspect of learning is "How does a designer know that she/he knows?" Being cognizant of "the moments of truth" and locating evidence of realities and research as a cultural production are things that a design researcher needs to learn as well. How to make sense of visual, oral, sensorial, and narrative observations? A significant learning for a design researcher is understanding what the different ways of entering into a research question are and how that affects the outcome. And once the inquiry comes in, it needs to embrace the complexity of an environment and also the complexity of human narratives.

What Makes One a Design Researcher?

Beyond the theoretical definitions of the methodologies and schools of thoughts with respect to research, what makes design research unique? The activity group brainstormed about this and discussed whether creativity and originality can or should be a part of not just an outcome of a design but the process of design as well, which

starts with the research phase itself. One key principle is being open to the unexpectedness of a place, or rather not be limited by the expectations around a place to embrace new findings. An educator facilitating design research should consciously see how one remains open. One also needs to learn when to call an observation a *generalization* and when that might lead to creation of assumptions for related data. The approach to embracing rich data must be extendable to new technology creators, users, and influencers as well. One of the most important aspects of design research is in demystifying pre-conceptions. The authenticity of a design researcher is not just in questioning outside but in questioning her/himself as well. This awareness leading to self-reflexivity allows authenticity. What a design researcher notices first in a place reveals a lot more about the researcher than the context, and an awareness of this informs the researcher of one's own position and biases. Hence sensemaking of a given context of research starts with sensemaking of one's own journey, assumptions and perspectives and questioning that help in reframing the questions resulting in new forms of sensemaking. One also needs to be aware of prior knowledge about a particular context. Some of the participants were of the opinion that prior knowledge limits reading or listening of the narratives and hence the context, whereas some believed prior knowledge helps in uncovering the many layers of meaning in a context.

One needs to learn context "literacy" in order to do design research. Often not knowing and having the humility to accept novelty in a context that might not be anticipated can be the best way to explore something. It was agreed that design learners need not only frameworks for observation, tools for conversations, strategies for interpretations, methodologies for sensory and other forms of explorations and immersion but also ways in which one can connect the dots, synthesize the data, and construct new knowledge that leads to wisdom with the awareness of one's own positions. The tools for sensemaking not only make the pedagogy stronger but enable one to be a better design researcher as well. Through the strategic usage of tools, one starts differentiating between different kinds of experiences and learns how to make sense of chaos. One also recognizes influences and interruptions

that a design intervention can often create as well and hence understands how an ethnographic experience might differ from a personal experience in the same context. In this journey of sensemaking, personal narratives and experiences add layers of meaning to the overall experience of the researcher in that context. In this process, a design research practitioner starts seeing participants as researchers, possesses a willingness to engage directly with the participants, builds and fosters relationships with them and has an empathetic presence leading to an emptying out of one's assumptions, building new core values, and can also act as an enabler of individual and social transformation. When a design researcher stops defining success as mere technological opportunities for created need and instead thinks of understanding the actual need of a user group, the result can be a truly value-driven design, in which the designer considers actual need over agenda and the research influences the lens of inquiry through which design takes place. In this respect memory as a site of knowledge not just helps in engaging with the client, it balances the power equation, can lead to transparency and efficiency, brings in informed decisions and self-reflexivity, and helps in making ethical choices as well.

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Transforming Research into Action with Visualizations: Understanding Barriers between Field Research and Design Education

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INTRODUCTION

The role of design research has greatly evolved in the last fifteen years, becoming commonplace in many design studios and practices and being taught in many university programs. Simultaneously, the need to understand people's contexts and behaviors has become an essential step in the design process to create successful solutions. However, conducting research that involves actual contact with intended audiences and analyzing that research data is less common. In some cases, designers gather data but then the design team doesn't know how to make sense of it and ends up not using it. In other cases, the design team gathers and analyzes rich, high-quality data, and even communicates findings to clients and other stakeholders, but then designers struggle to use these findings to advance the development of a solution or improve upon an existing one.

Falling within the "doing design research" conference topic, the goal of this workshop was to introduce a set of visual methods and tools rooted in the disciplined logic and visual principles of information design to provide support to two key steps of the design research process:

1) making sense of research data and

2) moving from findings to actionable items to inform the design process.

These two steps are inherently challenging, but they can be even more overwhelming when working with qualitative data gathered in the field, for example, using contextual interviews or participant observations. Field data is often unstructured, representing

participants' stories, feelings, expressions, gestures, tones, or behaviors. Working with visual methods and tools can help improve team collaboration, reveal hidden connections in the data, and help teams articulate ideas in a clearer way.[1]

Through hands-on activities, this workshop focused on helping participants gain confidence in the above two steps by externalizing and visualizing their thinking while making sense of data. Over the course of three hours, participants gained an overview of field research, engaged in warm-up exercises and discussion, and then dove into two activities in which they extracted and made sense of information from sample field data and, separately, visualized present and future states of a problem situation in order to find gaps and generate solutions. In this paper, I discuss key outputs from the workshop and unpack three main findings that could help bridge the gap between design research theory and practice.

WORKSHOP AIMS

The broader goal of this workshop was to shed light on field research and help participants better understand how to use this form of research to tackle design projects. To achieve this goal, workshop activities were aimed at exploring visual tools and methods to support the making sense of field data and application of findings to inform design decisions. To achieve these aims, the session explored the following questions:

- What is field research?
  - » What type of data should be gathered to identify needs?
  - » What are useful field notes?
  - » What is the difference between needs and solutions?
- Why isn't field research more common among designers?
  - » What are common myths and assumptions about the use of field research in design?
  - » When could field research be used in the course of a design project?
- What are visual methods and how can they support the field research process?
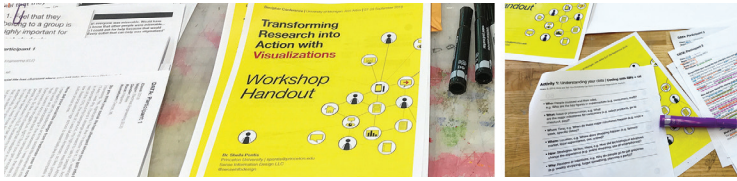 - » What specific visual methods can be used?

Figure 1: Handout, field data sets, pre-made Personas and Finding Cards given to each participant in the workshop.
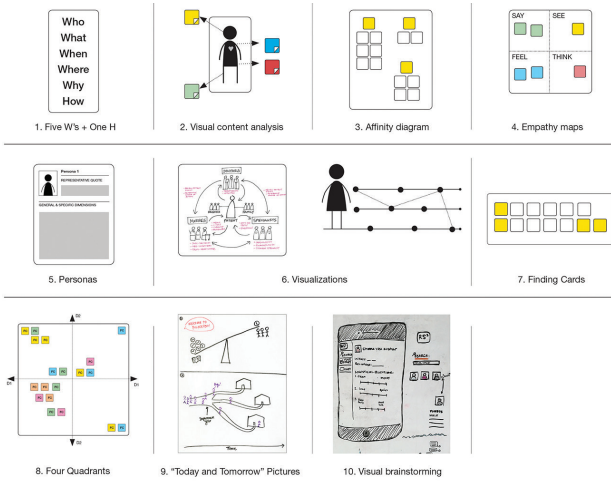

Figure 2: Overview of the ten visual methods introduced in the workshop.

ACTIVITIES, METHODS, AND ANALYSIS

The workshop was structured into two parts: first, a brief introduction with four warm-up activities and then two core activities lasting most of the session. To make the first core activity more realistic, participants worked with anonymized interview data gathered by Princeton University students during the spring semester 2018 as part of creativity and design thinking class. For the second core activity, participants worked with a compilation of twelve findings and four personas that emerged from the analysis of that same interview data. To help guide the day's activities, participants received a handout with instructions (Figure 1).

Ten visual methods were introduced but only six methods were discussed during the workshop: Five Ws and One H,[2] Affinity

Diagram, Personas, Visualizations, Finding Cards,[3] and Today and Tomorrow pictures (Figure 2).

Participants worked with the following visual methods during the warm-up and core activities:

- **Five Ws and One H:** The goal of this method is to organize and code data, using a list of "basic questions" or Five Ws and One H: who, what, when, where, why, and how or how much. Each can be used as a pre-defined code or category when reading through the data.

- **Affinity diagram:** The goal of this method is to help organize data. Data that has a similar meaning or refers to similar topics is extracted and written on individual cards or Post-it notes. Then individual cards with similar meanings are sorted and clustered into groups, creating categories. Once all codes are grouped as categories, they are combined as themes based on related meaning. Themes and categories are then examined for emerging patterns.

- **Today and Tomorrow pictures:** The goal of this method is to help make findings tangible by creating pictures. The Today picture represents the current reality and illustrates a persona's story or situation based on data and findings. The Tomorrow picture represents a "desired future state" and expresses how the same story or situation would change and improve after any identified problems or struggles have been addressed, for example, by a new design or a smoother process.[4]

- **Visual thinking[5]:** The goal of this method is to externalize and organize thoughts and ideas, improving the ability to see connections and communicate and broadening the range of cognitive operations. Sketching ideas, mind-mapping connections, or color-coding data are forms to think visually.

WARM-UP ACTIVITIES

Four short exercises were used to gauge participants' level of understanding and expertise on field research:

1) *Field notes: Which ones are more useful? Why?*

2) *Needs vs. solutions: What problems and needs can you infer from these field notes?*

3) *Myths and assumptions:* Why isn't field research more common among designers?

4) *Moving from data to insight*s[6]

CORE ACTIVITIES

Two activities were designed to provide insights to address a central unframed challenge: *How might we better understand the needs of college students*?

Activity 1: Understanding your data: The first activity focused on the early part of the design process, when there is a greater need to understand the audience. Given a central challenge and anonymous field research data about college students, participants had to individually analyze the text and visually code information using the Five Ws and One H. After analysis and coding, participants had to transfer each coded piece of information to a Post-it note and, in teams, create an affinity diagram, clustering all of their Post-its together around the same categories they used for coding.

Activity 2: Transforming findings into actionable items: The second activity shifted to the later part of the design process, when designers need to translate research findings into concrete solutions. Each team was given a set of finding cards (which summarized key insights from the field research data analysis) and two personas, from which participants had to choose specific findings to work with and one persona to design for. After reviewing the information, participants had to draw the current state, or Today picture, based on their present knowledge. They then had to imagine what the future state, or Tomorrow picture, would look like and sketch it out.

WORKSHOP ANALYSIS

Two of the conference volunteers and I took photos during the session and of teams' outputs from the core activities. In addition, I took notes of key questions and comments while participants were engaged in the activities and at the end of the session. Workshop outputs included coded data sets, Post-it notes with extracted data, affinity diagrams, sketches, and Today and Tomorrow pictures. This material was examined using comparative and content analysis. As a result, three main themes emerged that could be seen as barriers for teaching field research in design education. Throughout this

report, I illustrate findings with participants' actual words, which appear in quotation marks, and images from participants' work.

ANALYSIS OF WORKSHOP OUTPUTS

The workshop began with 30 participants who engaged in discussion and four warm-up activities (Figure 3). A quick round of introductions showed that there was varied familiarity with field research, as some participants mentioned that they did not know much about it, but many others reported that they have taught a related course or have used it in the past. It is important to note that the majority of participants also pointed out that they were drawn to the workshop by the word *visualizations;* they thought the workshop was going to explore *data visualization*[7] methods in field research, rather than the use of manual visual methods to help visualize the thinking process as explained in the workshop description.

REVIEWING CORE CONCEPTS

For the first warm-up activity, participants had to compare two examples of field notes (Figure 4) in order to determine which was more useful. Half the room first chose the shorter example as the more helpful field note because it was "concise" and "direct," whereas the longer notes had "too many details and words." Although both types of notes could be used at different moments in a field study, details and words are the essence of field research and what is needed to identify people's needs and inform design decisions. , The second warm-up activity focused on distinguishing needs from solutions; participants' answers indicated strong understanding of the difference between these words.

The next warm-up activity was focused on highlighting myths and assumptions about why field research remains uncommon among designers (Figure 5). Participants pointed out "time-consuming," "expensive," and "designers know best" as key reasons; these were the exact same words shown later on the slides reinforcing these as common assumptions.

The last warm-up exercise focused on exploring how to move from data to insights. Each participant first wrote observations about the room on Post-its; then, in teams, participants analyzed those observations to share insights. Teams generated a great variety

Figure 3: Overview of workshop participants.

Figure 4: Two types of field notes that were shown for the first warm-up exercise.
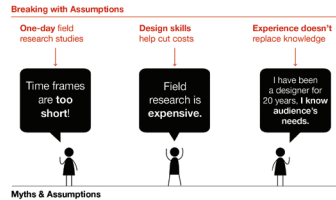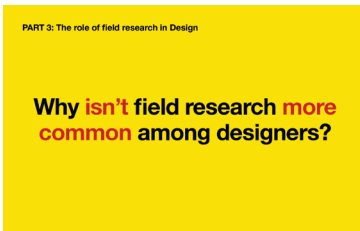
Figure 5: During discussion of the question on the left slide, participants responded with the same three key points that were presented afterward on the right slide.

Figures 6 and 7: Participants making sense of data they generated through observations for the last warm-up exercise.

of observations and easily grouped them based on similarities and created affinity diagrams, but they struggled to make inferences and identify insights from the analysis (Figures 6 and 7).

SUPPORTING FIELD RESEARCH WITH VISUAL METHODS

Coding and analyzing: Twelve participants working in four teams stayed on for the core activities. For the first activity, all teams manually coded and analyzed given data sets using the Five Ws and One H. The coding step helped them gain a sense of how students feel on campus and their main problems. Although participants chose their coding key, which ranged from different colored underlines to varying line patterns, most of them had not done a similar activity before (Figures 8–11). The following questions emerged at this point:

- "What does coding mean?"
- "What do I do if a data point could be coded under two categories?"
- "Should I code all data?"
- "What do I do once we have all data organized under categories?"

Figure 8: Team 1 first attached a different color to each basic question and then each team member color-coded their data set. Participants in this team extracted quotes verbatim.

For some participants, using a systematic method like Five Ws and One H was very helpful as it provided guidance for this step of the process. However, Post-its generated by each team showed that most participants paraphrased interview data rather than transcribed quotes verbatim. Due to time constraints, teams only spent 30 minutes in this activity and could not fully analyze the affinity diagrams.

Creating Today and Tomorrow pictures: For the second activity, teams chose a predefined persona and two to three findings from a pre-made set to work with and develop a design concept. Building on the understanding gained from the first activity, each team focused on different aspects of the problem and specific needs of the chosen persona. Having a clear direction anchored in data helped all teams generate ideas. As the teams worked with and analyzed the same field data set, the four Today pictures displayed similar findings, such as feelings of "uncertainty," students "not knowing
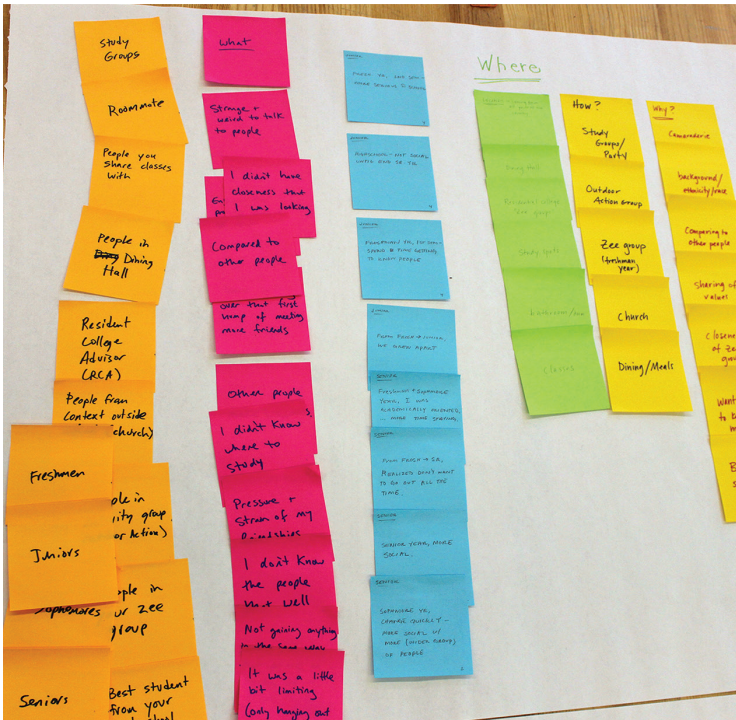
Figure 9: Team 2 also color-coded each basic question using Post-its, but not all team members extracted quotes verbatim, as can be seen from the orange, green, and yellow Post-its.
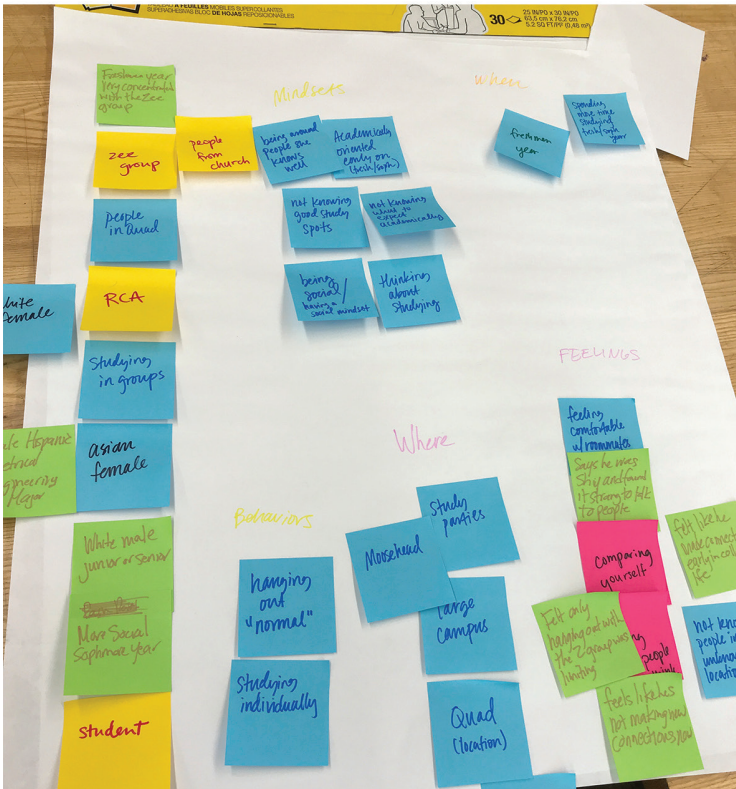
Figure 10: Participants from Team 3 did most of the analysis together and did not color code the basic questions. They mostly extracted key words rather than sentences.

Figure 11: Team 4 created a set of line patterns to code data using the basic questions and color Post-its to organize the coded data as an affinity diagram. Once data was coded, each participant extracted key words and sentences into an affinity diagram.

what to expect," students having "negative thoughts," students feeling "judged" and "isolated" due to strong focus on academics, and students having an "unbalanced social and academic life."

Whereas the resulting Today pictures illustrated similar stories, Tomorrow pictures reflected much more varied scenarios because each team focused on a persona with specific needs (Figure 12). Teams 1 and 3 chose a persona representing freshman students, and teams 2 and 4 chose a persona representing other classes, resulting in each team generating unique ideas to address the main challenge: *How might we help students have a better experience on campus?* For example, Team 1 stressed the need to make connections
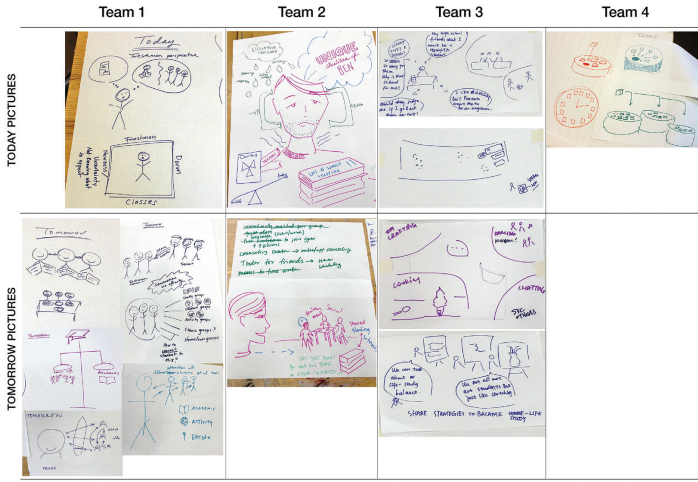
Figure 12: Comparison of Today and Tomorrow pictures created by each team. Team 4 created sketches illustrating their concept idea but did not generate a Tomorrow picture as the other teams.
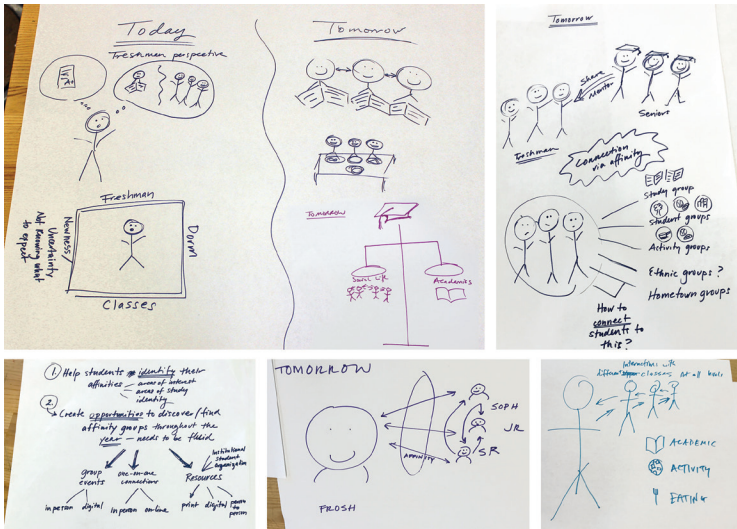
Figure 13: Team 1's Today and Tomorrow pictures. The team created one Today picture to visualize their understanding on the problem situation. Then each team member created one Tomorrow picture to communicate his or her idea. Interestingly, all four pictures reflect similar ideas.
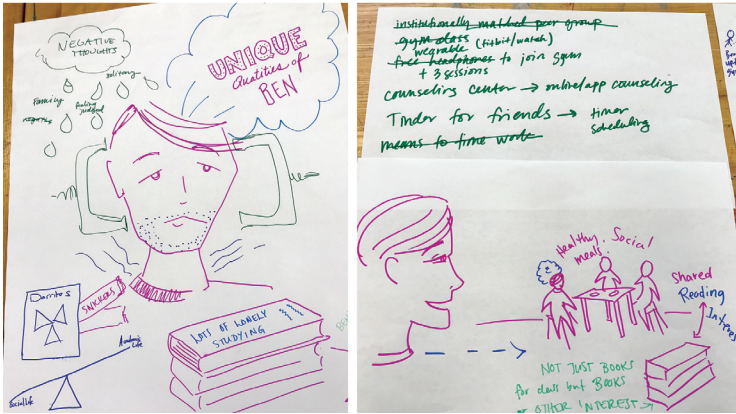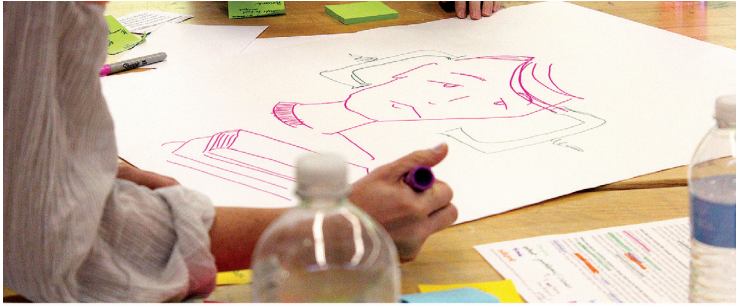
Figure 14: Team 2's Today and Tomorrow pictures.
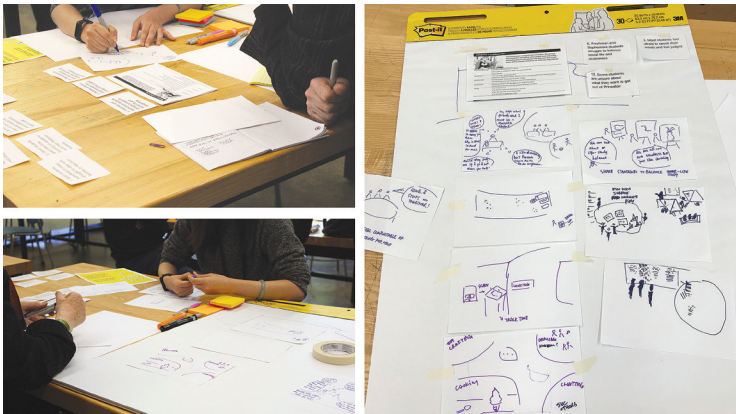
Figure 15: Team 3 did not create one Today picture, instead they created many Today and Tomorrow pictures to illustrate their understanding of the situation and ideas to address specific problems.
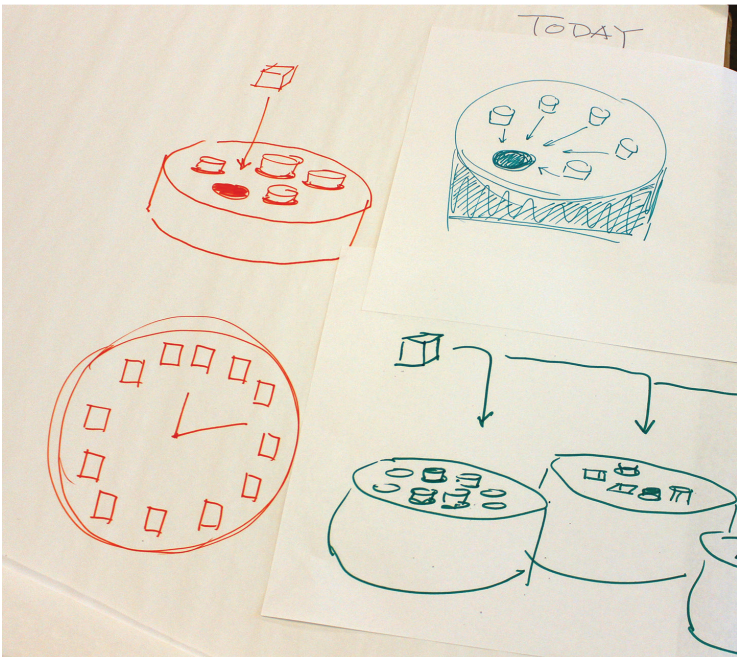
Figure 16: Team 4's Today pictures. This team created a conceptual representation of their problem understanding but did not off create a Tomorrow picture. Instead, they created concept sketches of their idea.

via affinity (Figure 13). They proposed three ways to help students improve their campus experience by developing activities to identify shared interests in personal and academic areas, creating opportunities to discover and find affinity groups throughout the year (such as through group events, one-on-one connections or resources), and fostering or increasing interactions with different classes at all levels. Team 2 suggested broadening students' interests beyond academics by promoting healthy means, social interactions, and shared reading spaces where students could spend time reading books unrelated to classes (Figure 14). Team 3 focused on addressing the imbalance between academics and life by suggesting strategies to foster community and social interactions and engaging in bonding activities not focused on academics like crafting, drawing, cooking, chatting (Figure 15). Team 4 specifically focused on addressing students' feelings of isolation due to not fitting in many groups or communities on campus. They proposed the creation of an app to encourage more communication and social interactions (Figure 16). These activities would help students feel more comfortable to share stories and ask for help.

DISCUSSION AND FINDINGS

Three main themes emerged from the analysis of the overall workshop experience:

1) A need for clarity about field research basics. Since the beginning of the workshop, the lack of clarity around what field research entails was indicated by many participants connecting the word visualization in the workshop title with the creation of data visualizations, such as statistical charts. Although some form of statistical chart could be created to visualize insights from field data, it is uncommon as the nature of field data is inherently qualitative—that is, mainly words rather than numeric data—and thus does not lend itself readily to that type of analysis or display. The fact that all the warm-up activities extended for almost twice as long as the allocated time because of additional discussion and explanation could be seen as another indicator of this confusion. The goal of these activities was to provide reminders of key concepts (e.g., field notes are rich in details and words because they need to describe a situation) and give examples, not to lecture or

provide detailed instruction on the basics, because it was assumed that participants would already be knowledgeable on the topic.

In particular, the third warm-up activity about myths and assumptions indicated strong misunderstanding or lack of information about field research among designers and its value for the development of high-quality solutions. Based on participants' responses, field research studies are still seen as needing considerable time and big budget. For example, participants stressed the need to have to travel to different countries as a big expense. Although these characteristics are certainly common in anthropology or sociology research studies,[10] the use of field research in design does not have to follow these same criteria because design problems have different requirements and needs. Furthermore, field studies could be adapted to the needs of most projects. For example, virtual ethnography could be used in design projects that have a small budget in order to investigate audience's experiences.[11] To fully adopt field research as part of design practice and to teach its full potential, it is imperative that designers undergo a significant mind shift and break assumptions about its true nature and use.

2) A need for understanding synthesis and interpretation. The last warm-up activity and the first core activity seemed to reveal an important area that needs work and practice: the use of abductive thinking to synthesize data and generate inferences.[12] Synthesis and interpretation are at the core of qualitative research because they help the researcher identify insights.[13,14] The use of pre-defined categories (Five Ws and One H) helped provide participants more support while coding, but, although teams did not have time to fully make sense of their affinity diagrams, questions that emerged before the end of this activity (e.g., "What do we do with the affinity diagram?," "How do we move from this to personas?") indicated a lack of experience with this type of reasoning. Difficulty in making inferences and using abductive reasoning could be one of the reasons why field research data—even rich and high-quality data—is often not used to inform the design process; that is, some designers may not know how to make sense of what they gather in the field. In a similar vein, some participants asked questions about how to use personas and findings to anchor ideas and design

decisions. This challenge can relate to the intangible nature of field research findings, often captured as words representing feelings, behaviors, struggles, experiences, or motivations.

3) A need for using visuals in the research process. Designers possess a unique set of visual skills that can support most steps of the research process.[15,16] However, as activities also indicated, most designers do not make the most of these skills in this context. Specifically, the second core activity involved the use of visual thinking to encourage team collaboration and represent connections and thoughts. Although some participants found it easy to make both Today and Tomorrow pictures visually parallel by using similar elements in each to enable comparison and contrast (e.g., Team 2), three out of the four teams seemed reluctant to visually express their ideas and create large-scale drawings on flip-chart sheets of paper. The goal was not to make illustrative renderings but to roughly diagram the main concepts in both Today and Tomorrow views, so that gaps between the two views could be more noticeable.

Yet participants were extremely engaged in generating ideas for how to bridge those gaps in order to make the future state a reality. In other words, translating research findings into visuals seemed unnatural to participants, and in most cases, they did not include enough details to tell a visual story. However, when participants had to think creatively and come up with concrete design ideas, they felt more comfortable sketching and drawing.

CONCLUSIONS

As design challenges broaden, and the need for field research becomes more essential to address intended audiences' needs and arrive to successful solutions, design research in general and field research in particular have slowly become more commonplace in design education. The Decipher conference and the various workshops tackling different dimensions of design research are proof of this evolution. However, there is still work to be done. Teaching design research alone does not fully prepare design educators; the work needs to take place in and out of the classroom. To equip future design generations with robust research skills, educators—who are also design practitioners—would benefit from also adopting design research as part of their daily practice.

There is no theory or book that can replace going into the field and learning by doing. Experiencing first-hand how to deal with ambiguity or unexpected situations and taking notes should be a key requirement for teaching field research.

This workshop was successful in providing rich insights about the current understanding of field research in the design community and highlighting areas that need attention, such as the lack of clarity on basic concepts. This session also had limitations that could have had an impact on the outputs and findings discussed here. For instance, the originally planned time frame of six hours, which was meant to accommodate the work required for both core activities, was halved to three hours. Given less time to work with, activities had to be adjusted, and several key steps had to be removed or worked around (e.g., practicing abductive thinking and synthesis). Consequently, participants had no time to go in-depth into either of the core activities. Despite participants' appreciation of the time and type of tasks involved in the analysis of field data, the workshop was an intense, fast-paced experience. In addition, as the core of the audience was design educators, assumptions were made about the baseline understanding of field research that hindered the flow of the workshop. This led to warm-up activities taking much more time than expected and not having enough time to spend on the core activities. A follow-up workshop with an in-depth focus on one of the core activities would be an interesting next step.

ACKNOWLEDGMENTS

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Designing as Understanding (&/or the Varieties of Research by Design)

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design methods, design science

INTRODUCTION

Design is a profession that lives in both sociocultural and technical settings. We cannot separate design from people, and as such, there is a need to consider design as a people-centered activity.[1] Design research is not any different; it involves understanding such settings.[2] However, despite many articulations of how designers might understand people, things, places, contexts, cultures, and so on, we continue to let design research be tinted (or tainted?) by traditional methods of understanding from the empirical sciences. While there have been numerous user-centered design approaches and efforts, as well as a number of methods for investigation[3,4,5,6,7,8,9] the design discipline keeps borrowing methods informed by the sciences that might not be enough to add context and insight to the design process (e.g., observations and interviews).[10,11] In addition, working with people requires understanding specific subpopulations and cross generations. How do we define the inherent practice of "design as research"? We lack the language and vocabulary to speak specifically about methods of *making for understanding.*

Designers-as-researchers implement interventions, which are inherently methods.[12] But at the same time, interventions produce something consumable that lives, that is designed, and that produces a constant construction of knowledge—over time, across contexts, and in both personal and social ways. Design interventions can be research. Central to this "making of understanding" is the role of prototyping. By externalizing prototyping processes,

designers create interventions that synthesize a point of view and put it out into the world to let people react, respond, interpret it, love it, hate it, and provide commentary. Reflecting on these interventions produces new knowledge. Is this a design method or a research method? Is this design, meaning, design as research?

With this activity group, we put forward the thesis that design methods and design interventions for the sake of gaining human insights are not two separate things. We cannot separate research methods from design per se and therefore question the relationship of research to design: Research for design? Research by design? Research within design? Research as design? Furthermore, the goal was to open a discussion on the tensions between the concepts of research and design and present design as its own science for empirical research. Design occupies a unique position outside the categories of natural, technical, and social sciences. The hard sciences give us knowledge, but that knowledge-making activity is conducted separate from the inherent value of design as a generative and transformative activity. Design can contribute to the empirical sciences from its own position. However, design is—or can be— a science of its own, but we have not yet created an identity nor language for design as a science. The purpose of this activity group was to encourage design educators to develop a natural language to engage with one another, to discuss their research, to engage in research with other disciplines, and to help students understand how their tacit knowledge as designers already contributes to *ways of knowing* as researchers.

ARGUMENT

The presenters introduced themselves as design researchers whose collaborations have them engaged in working with other colleagues in distinct interdisciplinary contexts. One regularly collaborates with researchers in the natural sciences and technical disciplines, while the other regularly collaborates with researchers in the humanities and social sciences. Based on these experiences, the presenters began the session with the argument that prototyping is a necessary method of knowing and making things known and that designers are uniquely qualified to contribute new, customized, and novel methods to interdisciplinary research through acts of prototyping and/or

making. Rather than borrowing methods from other disciplines, design researchers *make* their interventions. *This is inherently design.*

The presenters gave a very brief survey of existing research sources and models that design researchers have adopted. These included examples of definitive texts on research methods from the social sciences[13,14,15] architecture,[16] and educational psychology[17] in relation to a variety of design-centric sources, including texts from social innovation,[18,19] situated design methods,[20] and product design.[21] The purpose of identifying the diversity and sometimes contradictory agendas of these sources was to argue for the lack of a cohesive design-specific vocabulary for the methods, outcomes, and language of design's capacity in "making understanding."

Despite many articulations of how designers might understand people, things, places, contexts, cultures, etc., design research continues to borrow methods from empirical sciences that may not be suitable to developing the contexts and insights necessary for developing a robust design process. Working with people requires "making understanding" *with* people. To illustrate the argument, a few select design research case studies were presented, including the "Real Good Experiment" by Blu Dot, to challenge the existing empirical models (Figure 1).

EXPLORATORY ACTIVITY

With the argument presented, three key issues were identified as challenges in guiding the activity group session in regard to "making for understanding" and challenging the design of methods:
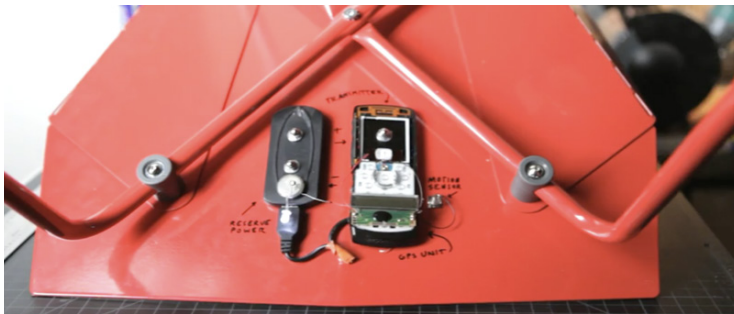
Figure 1: Blu Dot's "Real Good Experiment" design.

- **Engagement:** methods and their effectiveness with user engagement; making methods and information accessible and engaging
- **Contextualization:** understanding the limits of data gathering and privacy; and
- **Recall:** accuracy of responses.

Participants were then engaged in an exploratory and participatory activity. Participants were given case studies to exercise as a group. The case studies responded to the conference themes in defining design research by "doing research." Participants were charged to challenge the distinctions between design as making and separate acts of conducting research to inform the making in order to re-cast the making as a form of investigation. In addition, participants were given access to prototyping materials for designing problem-specific interventions (Figure 2).

The challenge for the activity session was for each of three participating teams to develop a design intervention as *research method* to engage and measure a specific aspect of "well-being." The three challenges were articulated across varying levels of social dependency, from self to environment to community.

The challenge for Team 1 was to respond to the topic of well-being at the scale of "self" on the topic of vaping. The question posed for the team: How do you measure habitual personal behaviors?

The challenge for Team 2 was to respond to the topic of well-being at the scale of "environment" on the topic of workspace health. The question posed for the team: How do you measure the health of a social environment?

Figure 2: Prototyping materials provided to activity group participants.

The challenge for Team 3 was to respond to the topic of well-being at the scale of "community" on the topic of bullying. The question posed for the team: How do you define bullying, where does it happen, who does it, who is impacted, and how can it be measured?

There were three ground rules for all teams:

1) The intervention may not rely on "traditional" research methods, particularly methods adopted from other disciplines.

2) The research intervention could not rely on human recall.

3) The research approach should utilize design as means to intervene, not invade.

The activity group's process included five steps:

1) Define Goals: What are you looking for?

2) Define Metrics: What can you measure?

3) Ideate the Concept: How will you measure?

4) Respond to Specific Prompts:

a) Implementation: Is the intervention too technical? Is it scalable? What is the necessary or desired frequency of monitoring or sampling? Could your research team handle this?

Figure 3: Activity group participants prototyping concepts.

Figure 4: Activity group participants prototyping concepts.

b) Engagement: Will participants be motivated to engage and adhere? How? Will they understand what to do and what not to do? How? Will they be distracted or influenced by the intervention?

c) Privacy/Depth: Is it too intrusive, or does it reveal too much? Will the data be deep enough and contextual enough?

5) Prototype: Make sample components to communicate the goals, metrics, and implementation of the design intervention as a research method (Figures 3 and 4).

Finally, the teams shared their outcomes with the intention of codifying the different approaches taken for different types and scales of design interventions as research methods. Each team presented their process, how they addressed the five aforementioned steps, and how their activities responded to the ground rules of engagement, contextualization, and recall (Figures 5, 6, and 7).

OUTCOMES BY (&/OR DESIGN)

The following are brief reflections on the activity through the results of each team.

Figure 5: Activity group participants presenting concepts.

Figure 6: Activity group participants presenting concepts.

Team 1 was challenged to respond to the topic well-being at the scale of "self" on the topic of vaping. The team responded with a design intervention aimed at college students, to be implemented on a college campus. The concept was to create a series of distinct kiosks or pavilions as pop-up structures on a campus. Each kiosk would represent distinct lifestyle branded elements with the intention of appealing to different vaping consumers along the lines of their particular lure to the habit. The kiosks would then distribute free samples of vaping e-liquids and use the encounter to elicit information from the participants about their vaping preferences (Figure 8). Although the e-liquids distributed may be more or less the same across the different kiosks, the distinct brand language of the different kiosks, distributed e-liquids, and vaping paraphernalia would in themselves attempt to capture different typologies of vapers.

The interesting aspect of this design intervention was the proposal of asking users to bring the vaping tool back to the kiosk to understand who's purchasing the different equipment, frequency or refills, and aligning it with a developing typology. For example, understanding user motivations such as friends are doing it, stress, wanting to fit in, wanting to rebel; "I want to be cool" brand, "FOMO" (fear of missing out) brand; different times during the semester, night vs. day, different areas of campus, different campus, etc. It would be insightful to learn about consumer preferences through the kiosk product and reveal deeper information about the kinds of students, their environments, and their pressures as a means for developing a strategy for contending with negative and/or addictive habits.

Team 2 was challenged to respond to the topic well-being at the scale of "environment" on the topic of workspace health.

Figure 7: Activity group participants discussing concepts.

Figure 8: Activity group concept proposition.

Participants proposed that in order to understand wellness, there is a need to define both space and user and their relationships. As part of their conceptualization, they proposed the possibility of customized spaces that allow users to adjust moveable furniture to define micro-structured spaces. However, the team realized that instead of suggesting customization, they advanced the idea of having participants react to the space and ambient influences. Their intervention was around the need to understand behavior within whatever space they occupy.

Their intervention then developed into using design studio spaces to implement wearable devices as biofeedback and location trackers. The goal was to track movements around the spaces connected to heart rate levels and other biofeedback. They proposed designing visual interventions in the space such as in the flooring (Figure 9). For example, the team was interested in understanding behavioral patterns from visual stimuli: Where are the high stress locations in the space, who is responding negatively to which areas, etc.?

Although the wearable devices may be intrusive, this teams' proposition is noteworthy as it proposes methods, other than observational techniques, to understand behavioral patterns. Moreover, the idea of proposing design interventions to experiment with the responses is equally valid. Overall, the design intervention is promising as it is embedded while engaging users in research seamlessly.

Team 3 was challenged to respond to the topic well-being at the scale of the community on the topic of bullying. Participants eschewed what they believed was an obvious audience of teenagers and decided instead to focus on the issue of bullying within communities for
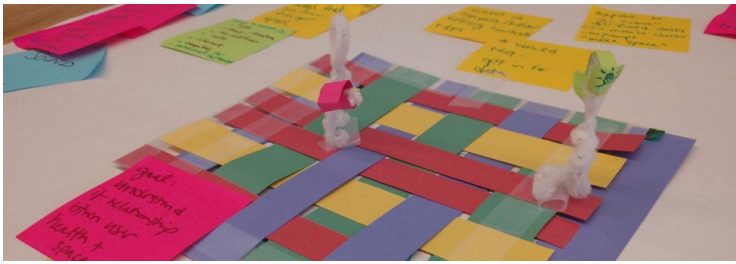
Figure 9: Activity group concept proposition.

the aging, for example, retirement communities or large condo buildings. The focus transitioned to this demographic due to the fact of one of the team members was currently experiencing such issues, having recently moved to a large condo development occupied primarily by aging residents, thus providing the team with insights into the otherwise unknown complexities of bullying in aging communities.

While communal living communities (retirement community) have rules or conventions and norms, when it comes to canines among community members, these rules are not relevant or applicable resulting in a passive collection of people's reactions. People who move into retirement communities are often anxious because they give up their existing comfort zones. If anything upsets them, they become reclusive. Residential communities for the aging need to be careful about the potential for bullying to turn residents inward, become reclusive, and isolate them from the community.

The team proposed Bully-Bait: a smart system to measure and moderate behaviors of users, human or canine, who act as bully-baiters (Figure 10). Their solution proposed the moderation of canine behaviors and seamlessly built rules for community member interactions. For example, one of the proposed interactions included the following scenario: If you leave an apartment building, you don't know who else is leaving to walk the dog. You might meet outside the elevator when you're walking your dog, producing a negative encounter between the two dogs—a stressful situation you wouldn't have experienced in your own home. Therefore, the dog collar intervention proposed including a small video camera in the collar to trigger recordings of such situations. In this scenario,

if every dog is tagged, no dog is identified as "problematic." The intervention not only would record interactions but also moderate future user behaviors. The team also proposed environmental signage to help communicate where residents might go to either engage in social dog activities (e.g., take a walk together) or take a different path to avoid dogs and their dog owners.

The novel aspect of the proposed outcome was not only measuring interactions among users in a given space but also moderating the behaviors in that space. Although the prompt started as an issue to understand, this team quickly moved to ideate a solution to the stated problem while defining technologies to measure the complexity of the issues in context. In other words, the innovative aspect of the intervention was using a solution for defining the method to tackle the problem and unifying research and design.

REFLECTIONS/IMPLICATIONS

The purpose of this activity group was to encourage design educators to develop a natural language to engage with one another, to discuss their research, to engage in research with other disciplines, and to help students understand how their tacit knowledge as designers already contributes to ways of knowing as researchers. Through a process of ideation and prototyping, participants proposed three differentiated design interventions as research methods. These propositions responded to issues of well-being at the scales of self, environment, and community, on the topics of vaping, workspace health, and bullying as introduced by the authors.

Figure 10: Activity group concept proposition.

After the activity group participant presentations, three main reflections and implications arose. First, prototyping leads to asking better questions earlier in the design process. One of the significant insights was that prototyping leads to asking questions horizontally and vertically. Meaning, it leads to asking new and more in-depth questions that can trigger more specialized and focused research tools for understanding people and their behaviors. As such, tangibles, making things, and the making of tools better link initial inquiry to increasingly in-depth understanding,

Second, a positive side of equating doing research as doing design is more to the "core" than traditional methods. Implicit information does not become explicit until they are translated into the design interventions that then capture the existing human behaviors. Design makes these implicit motivations/behaviors explicit and tangible in ways that other scientific methods could not capture. The results are already more deeply apparent than just asking people.

Last, in equating doing research as doing design, designing research interventions can easily cross the limits of ethics and persuasion. Novel research methods conceived as embedded interventions can challenge persuasion from whom the data is collected. It can be perceived as a deterministic approach, from which the user is left with no choice of consent. Consent itself becomes designed. This is not to say that is necessarily or always a problem, but it is a significant consideration to maintain in the prototyping process and as a measure of doing good design and good research.

Overall, the activity and discussion in this activity group revealed the need to advance better design methods for understanding people, places, and behaviors. Participants engaged in the process of designing and making interventions that are embedded in the context where understanding is sought. While designing and making tools allows to better link research to understanding, close attention should be paid to the propositions to ensure they are not hindered through the interventions by ethical boundaries defined by the empirical sciences.

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Feminist Methodologies for Human-Centered Design

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Feminist theory has informed the discourse and praxis of several areas of design in recent decades, most notably architecture, industrial design, and urban planning, by providing a lens for examining the role of gender bias in designed spaces and objects. The aim of this conference session was to delineate the ways in which intersectional feminist thought can similarly benefit the field of design research, particularly pertaining to communication design, interaction design, and product design. Feminism is a natural ally to design given its commitment to such issues as agency, fulfillment, identity, equity, diversity, and empowerment.[1] However, even when pursuing goals that can be described as feminist, designers have neglected to engage explicitly with feminism. In this activity group, participants explored feminism as a conceptual framework for equity-centered design that extends beyond gender. After they were introduced to feminist theories and research methodologies, participants were asked to re-examine their own research agenda through a feminist lens and to develop a living definition of feminist design research.

TOWARD A NEW PARADIGM

Design intervenes in nearly every aspect of the human experience today and is therefore perpetually in dialogue—whether implicitly or explicitly—with complex social, political, and economic systems. In our modern patriarchal society, such systems are deeply entrenched in structures of privilege and oppression by which certain people benefit and others suffer. Despite being "user-centered" in their approach to problem solving, designers often uphold inequitable power structures by focusing on individual

experiences rather than systemic inequity. Human-centered design has attempted to address this issue by placing empathy and inclusion at the center of its focus, and many of its methods are successful in increasing representation and reducing bias. However, a "human-centered" approach does not necessarily target or elevate the experiences of those who are marginalized, nor does it explicitly acknowledge the systems that perpetuate their marginalization. Striving to be inclusive of marginalized voices provides a false sense of representation, also called "sharing the microphone," in which those with power allow marginalized voices to be heard while remaining under control of the dominant narrative. Furthermore, empathy as a method may allow a designer to better understand the challenges of a marginalized user's experience but does not equip them to address the historical, social, or political context of those challenges.

Design research as a field has also been shaped by patriarchal values and practices. Dominant research paradigms have long assumed the universality of a white male-centered experience and have used it as the yardstick of unbiased research.[2] Positivist and post-positivist epistemologies assert that researchers can find absolute truth and have the self-appointed authority to do so. Attempts to achieve "neutrality" and "objectivity" separate researchers from their subjects and abstract their experiences into data, removing critical contextual information and preventing a deep understanding.[3] Quantitative research methods, especially, do not typically represent human diversity and tend to reinforce stereotypes and biases. By engaging with systems of oppression using methods that uphold the status quo, even the most well-intentioned designers and researchers play a critical role in perpetuating the subordination of marginalized people. As designers are increasingly expected to be held accountable for the consequences of their actions,[4] there is an urgent need for design to critically examine its role in social power structures and explore new methods for achieving equitable design solutions.

In order to serve the real-world needs of all people, a more targeted, systematic approach that engages critically with social problems in an intersectional way is needed. Feminism provides a framework with which to operate this methodology. Professor

and design historian Cheryl Buckley wrote "a feminist approach is neither a side-issue nor a novel historical perspective—it is a central concern of contemporary design."[5] Ideologically, feminism is a movement for social activism that aims to achieve political, economic, and social equality of all people. As a research paradigm, feminism is a conceptual framework for equity-centered research that has influenced the fields of sociology and anthropology for many decades.[6] Feminist epistemologies assert that knowledge is socially situated, therefore all knowledge attempts are inevitably enmeshed in the power structures of patriarchal society.[7] Non-dominantly situated people in society hold and produce different types of knowledge than their dominant counterparts. Therefore, to obtain knowledge that is representative of lived experiences, research must begin with those who are marginalized. Feminist epistemologies, when applied to design, introduce a new domain of user research—the "marginal user"—that forces us to integrate a new set of methods for user research.[8] The model must address the ways in which researchers collect and analyze data, the nature of their interactions with research participants, and, most important, the context of the design problems they choose to address through their research. By drawing on feminist research methodologies, a new model for design research will elevate the experiences of marginal users and drive action for social justice.

GROUP DISCUSSIONS

In this activity group, 15 conference participants were tasked with developing a new model for design research that integrates intersectional feminist methodologies and addresses the needs of the marginal user. Designers, educators, and researchers from various backgrounds came together to share their experiences and to articulate their vision for a new paradigm. The session began with a short presentation on feminist theory that introduced participants to intersectionality, feminist epistemologies, and feminist research methods. Next, participants broke into three groups and received a handout with the following prompts to drive discussion:

- *Examine:* How might you operate your research through an intersectional feminist lens? Who are your "marginal users"?
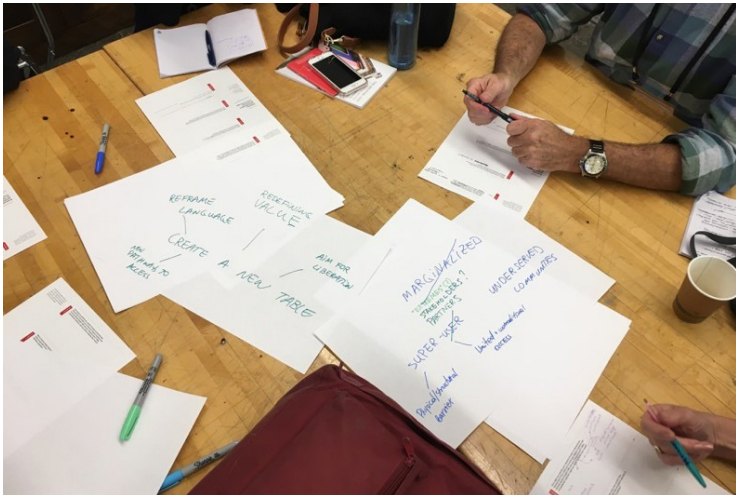
Figure 1: Participants discuss prompts and sketch conceptual frameworks.

- *Define:* What is feminist design research in your own words? How might we generate a living definition that considers a plurality of identities, experiences, and research contexts?
- *Generate:* What might a conceptual framework for feminist design research look like? How might we rewrite existing visual models for design through an intersectional feminist lens or generate entirely new ones (e.g., manifesto, concept map, toolbox, road map, flow chart, checklist, rubric, taxonomy, diagram, stakeholder map, etc.)?

The resulting discussions ranged from topics that were personal to professional, from critical to aspirational. Some participants shared challenges they faced within research institutions, including implicit bias of other researchers and less value being placed on research that utilizes nontraditional methods. Several noted a shift in perspective when viewing their own research through a feminist lens. One participant admitted to upholding inequitable power structures in the language used to formulate their research question; another lamented the lack of human diversity in methods they had utilized. Some frustrations were shared that stemmed from personal experiences, such as the challenges of being women of color in academia and negative experiences as research subjects.

Overall, the small group discussions revealed a shared sensitivity to issues relating to inclusion and representation in research, and a shared willingness to subvert the status quo. As questions and suggestions for a new research model arose, the subject of power became a critical consideration—who has it, who doesn't, and how to redistribute it in research contexts. Conversations about marginalized people became conversations about their oppressors and the role that researchers play in perpetuating oppression. Most important, participants demonstrated a willingness to implicate themselves as oppressors, acknowledging their power as researchers and examining their privilege.

SESSION OUTCOMES

Participants were asked to synthesize the outcomes of their group's discussion in the form of a living definition or a visual model of feminist design research. In the feminist spirit of embracing complexity and plurality, participants were encouraged to define or visualize a model that was specific to certain scenarios and could possibly even be personal while avoiding universal meanings and abstractions.

Group 1 approached their model through the lens of relationships. By acknowledging the role of the researchers' and subjects' relationships to one another, as well as their relationships to

Figure 2: Participants present their findings. Photo courtesy of Denielle Emans.

power, they established that feminist design research is defined as being trust based. Their discussion explored the meaning of trust and how its presence in a research context can shift the outcome, especially in design research where stakeholders are often co-designers. As they discussed methods for building and maintaining trust between researchers and subjects, they determined several critical factors that determine the presence of trust: researchers must be invited by subjects to enter their community; their interactions must take place in a physical space that is public and accessible, such as an outdoor location; and, not least important, there must be food. This definition of feminist design research takes a practical and contextual approach to reducing power hierarchies in research contexts, reminding us what really matters in ethnographic research: our shared humanity.

Group 2 created a visual model based on a common metaphor used often in diversity and inclusion contexts—having a seat at the table. First, they visualized the conventional "table" of design and the four "legs" that hold it up: industry, money, tradition, and users. They then asked questions to reimagine the table: Who needs to be at the table? Who is being served? How do you shift power? They redesigned the table as the "new feminist table" and established a new set of "legs" or values by which it is defined: partners + access, reframing language and narrative, redefining value and being of service. This new model reimagines not only the relationship between researchers and subjects but also the relationship between researchers and institutions. By redefining research as "being of service," we are drawing attention to whose values and agenda to which our research is traditionally in service. To be in service to academia and other research institutions is often directly at odds with being of service to the people whom we are researching. Similarly, "redefining value" forces us to confront the capitalistic values that pervade the design industry and to ask ourselves for whom our work provides value. In feminist design research, financial and market value are replaced with social and personal value; furthermore, those for whom we seek to create value are the ones who get to define it.

Group 3 arrived at their definition through a manifesto of values: feminist design research is people centered; values

autobiographical research, intentionality of social impact, empowerment through access; and continuously acknowledges subject position. This approach combines a shift in both the researcher's values and goals. By placing special emphasis on subjects' experiences and social positions, the researcher is able to shape the design outcome to maximize social impact. "Empowerment through access" is a critical acknowledgment of the subjects' relationship to power; designing for equity does not mean we are reaching down to lift up someone who is oppressed but rather using power to remove barriers and create access for them. This model also addresses the researcher's role as a subject, placing value on autobiographical investigation and personal experience.

The three models for feminist design research created during this activity group demonstrate a wide variety of perspectives but also many shared values, such as redistributing power, redefining value, and creating access. Sociologist and researcher Shulamit Reinharz wrote, "The feminist spirit is one of breaking free, including breaking free of methodological traditions."[9] Participants in this session embraced the feminist spirit of challenging the status quo and questioned accepted ways of doing and knowing in order to explore new methods for designing for marginalized audiences. Through collaboration and co-creation, they established a plurality of outcomes to address complex issues in a multitude of contexts. The discussions and outcomes of this session marked the beginning of many critical conversations and efforts toward defining new best practices for equity and inclusion in human-centered design.

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How Might We Teach Design Research Methods to Non-designers in Order to Facilitate Multidisciplinary Team Collaboration?

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THE EXPANSION OF DESIGN EDUCATION

The field of design is evolving beyond the research and development of objects to include processes, services, and experiences, resulting in the expansion of approaches and mediums. With this growth in the industry, and a changing perception of what design can be, there is an opportunity for design educators to influence outside audiences. Adapting and responding to this growth by extending design's reach and collaborating with our colleagues from other disciplines outside the school of design has become increasingly important.

THE UIC CLINICAL IMMERSION PROGRAM

The Clinical Immersion Program (CIP) at the University of Illinois at Chicago (UIC) began in 2014. This program is a six-week summer internship for medical and bioengineering students, taught collaboratively by design and bioengineering faculty. The primary goal of the CIP, approaching its sixth year, is to prepare

students for the design of medical devices validated by end-user needs. The development of medical devices is a tremendous challenge necessitating both a deep understanding of the user and multidisciplinary collaboration. The first step in the user-centered design process is needs identification, in which designers empathize and conduct primary research with stakeholders (e.g., observe and interview patients, physicians, nurses, etc.) to identify unmet user needs both implicit and tacit. Historically, for engineering students, there has been a gap between understanding technical requirements and unmet user needs. Commonly this gap arises from a lack of primary research, including observation and interviewing of relevant users prior to concept generation. Thus, the CIP was developed by the Richard and Loan Hill Department of Bioengineering at UIC to address this gap by introducing bioengineering and medical students to needs identification and user-centered design methods.[1,2,3] The goal of the CIP is to enable students to create more impactful devices by introducing them to needs identification through user-centered design.

THE GAP BETWEEN USER NEED AND DEVICE DESIGN

While (bio)engineers are well versed in the engineering design cycle, they are less proficient at identifying user needs. This results in a gap between medical device design and true user need. The engineering design cycle historically focuses on the technical aspects of the design, whereas the user-centered design process (also referred to as human factors engineering or human-centered design) emphasizes user needs throughout the process. Today there is a greater awareness and focus on user empathy and applying user-centered design methodology to the development of medical device design and delivery. This approach is based on a deep understanding of the user.[4] Assessing what users need (through observations and interviews) and documenting how they use a product or service enables the designer to look at their experience through a human lens. The goal of user-centered design is to create products and services that are more usable, affordable, accessible, comfortable, compatible, and emotional. Failure to meet user needs in the healthcare industry can have dire consequences, as exemplified recently by the massive recall and FDA-mandated redesign of infusion pumps.[5] The UIC Clinical Immersion Program was specifically developed to address this gap between user needs and medical device design.

WEEKLY DESIGN WORKSHOPS

Our approach to teaching user-centered design to engineering and medical students is to bring these students together in weekly Monday workshops where they learn and work together in a creative environment. During the remainder of the week (i.e., Tuesday–Friday), students work in teams and spend time in various clinical environments observing activities that may include surgeries in operating rooms, procedures in hospital clinics, as well as interactions between physicians and patients. In total, students spend 35 hours in hospital clinics each week. The Monday sessions take place at the UIC Innovation Center, where each week, design and bioengineering faculty introduce new lessons in user-centered design. These workshops are designed to be interactive and push the bioengineering and medical students beyond their comfort zone. For example, the first workshop contains an icebreaker session (see photos) and an interactive exercise in which students explore communication and needs finding through the rapid design and prototyping of a special utensil to help a partner eat his or her favorite food—an exercise which requires listening, empathy, and creativity. In subsequent workshops, students are taught contextual inquiry methods, such as observation and interviewing techniques, which they apply in their clinical immersion. Every week, each team reports on their findings in the field, including a discussion about opportunities and challenges they experience. Students learn qualitative analysis basics (i.e., how to make sense of their research data), then arrive at insights about their clinical experiences. It is from these insights that they begin to develop needs statements about specific problems they identify. Finally, students learn and practice ideation methods such as storyboarding, word storming, sketching, and prototyping. The six-week internship ends with the teams' presentations of their findings in the clinic, needs statements, and initial concepts and prototypes to address those needs.

Figure 1 summarizes the process taught in the UIC Clinical Immersion Program. Although this process is taught at an accelerated pace for the six-week CIP, it is versatile and could be extended readily to accommodate other program durations.
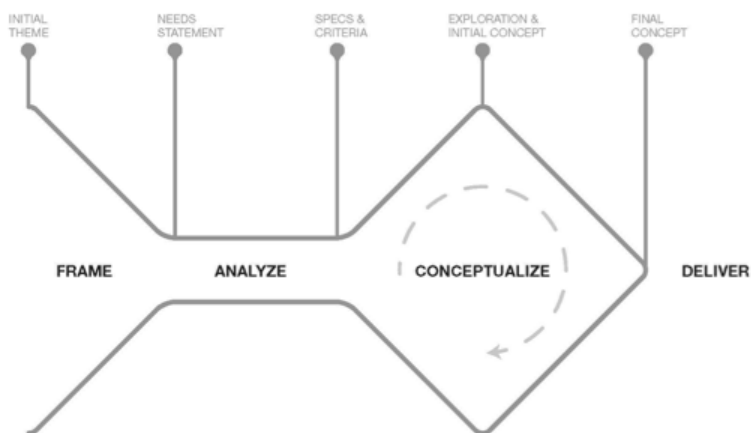
Figure 1: User-centered design process taught in the UIC Clinical Immersion Program.

Figure 2: Students learn communication skills during an interactive workshop.

Figure 3: Teams analyze research from their notes from their clinical experiences.
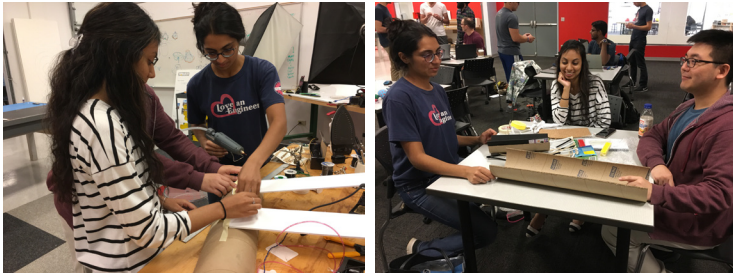
Figure 4: Building rough prototypes during ideation session.

THE IMPACT OF TEACHING DESIGN TO NON-DESIGNERS

Multidisciplinary collaboration allows our colleagues outside of the field of design to have an opportunity to learn principles of design and apply those principles to solve a variety of problems. With that, they can develop valuable new skill sets that can be used both within their own field and on interdisciplinary teams. When designers work on teams with colleagues from other areas (instead of following a more traditional linear or "hand off" process), there is a greater likelihood that new products, services, and experiences that result from this collaboration will better meet the needs of users. Overall, the goal of this report is not to create more designers but to expand design education beyond the walls of design schools by sharing our best practices in design instruction, tools, and processes.

ACTIVITY GROUP AT AIGA DECIPHER CONFERENCE 2018

Faculty from the UIC Clinical Immersion Program facilitated an activity group on Saturday, September 29, 2018, at the AIGA Decipher conference, hosted by the Penny W. Stamps School of Art & Design at the University of Michigan, Ann Arbor. Susan Stirling and Kimberlee Wilkens (UIC School of Design) and Anthony E. Felder (UIC Department of Bioengineering) led 21 conference participants through the fundamental goals of their six-week intensive program. Hands-on activities exploring the week-to-week curriculum structure were shared, with the intention of replicating scenarios non-design students encounter in and out of the clinic (Figures 2–5).

The session began with an icebreaker exercise that paired up participants to discuss and generate rapid storyboards based on

Figure 5: Top row: activity group participants work in pairs on storyboard/sticker interviews; middle row: storyboard with empathy imagery, faculty presents primary research from program; bottom row: participants work on needs statements, debrief activity group session.

their recent doctor visits. Upon completion, each storyboard was reviewed to assess moments of frustration. Supplied sticker sheets with assorted imagery were utilized to add a layer of empathy throughout their journeys. This helped capture emotional states at each step of the process. What resulted was an exploration of the many "pain points" in the storyboards and opportunities for improvement in the journeys.

To introduce the next exercise, a brief presentation of actual primary research data compiled by a student team from the Clinical Immersion Program was provided to the group. The participants

were presented with a framework for development of an effective needs statement and then asked to develop their own needs statement based on the provided primary research. This was followed by a faculty-guided ideation exercise where participants translated their needs statement into possible concepts that address their identified need.

The session ended with feedback from participants about the activity group as well as their comments about similar programs they are involved with at their own institutions. It was gratifying to learn more about other programs run by like-minded colleagues with similar goals of interdisciplinary collaboration. Several attendees expressed interest in the adoption or integration of the UIC program, demonstrating a need for initiatives like the Clinical Immersion Program in other academic settings.

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The Residue of Interaction: Reflecting on the Impact of Working with Real People in Design (Education) and Exploring the Potential of Designing for One

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DESIGN RESEARCH: IN THE CLASSROOM

Based in an educational context and related to areas of participatory design and research through design,[1] this workshop reflected on the design research approach *designing for one*[2] and how it promotes student agency, establishes a space for alternative learning outcomes, and creates an opportunity for meaningful, cross-discipline initiatives both in and outside of the classroom. By creating spaces within education that create opportunities for these insights to manifest, we open classrooms to new student experiences/learning. The objectives of the workshop were to relate these competencies against the needs of future designers and recommend disciplines/ social contexts that could utilize this approach. In order to engage participants, the workshop used a collective brainstorm activity that visualized discussions and provided parity between the voices of participants. Documented with film, both the moderator and a selection of participants were interviewed in order to disseminate workshop outcomes and reflections. The results of the workshop are being analyzed as part of ongoing doctoral research into *designing for one* and its impact on and potential for the student designer.

SHIFTING FROM DESIGNING FOR *USERS* TO DESIGNING WITH *INDIVIDUALS*: WHERE THIS WORKSHOP SITUATES ITSELF

Over the last decade, the notion of working together (co-design, co-creation, participatory design, user-centered design, human-

centered design, etc.) with users has become synonymous with an idea of "better design." Drawing on ideologies aligned to participatory design that suggests that design should support the marginalized or underprivileged[3] and should "empower groups of people whose views, opinions and needs might be the most ignored by mainstream society,"[4] the idea of *designing for one* explored in the workshop focused on the *individual* user, regardless of his/her level of marginalization.

Different to the process in which designers respond to needs requirements based on secondhand accounts or fictional personas, *designing for one* allows for student designers to take a closer look into the everyday needs of individuals. Next to this, initial research suggests that there are experiences within this process that lead to specific types of learning, supporting the idea that there are genuine benefits to engaging with diversity.[5] Although the methods used within the process may be similar to that of other design approaches, that is, a designer may propose going for a walk (guided tour) or follow along (shadowing) or try to visualize a segment of a person's life (storyboard), each student experience is unique. In the projects represented within the workshop, the student designer's focus was to generate bespoke designs that suited one person in particular, paying attention to his/her physical abilities, access to technology, social relationships, interests, needs and wishes. What initial research analysis shows is that this encounter modifies the student's design direction and impacts the designed artifact that is created as well as increases the student's motivation within the course.

This can be seen in the following example that placed graphic design students into a skilled nursing facility specifically focused on people with dementia. When the course was finished, students were asked to reflect on their experience. In the following example, Taylor, a junior, recalled how she felt the first day and how it challenged her idea of the role of graphic design. But her recollection also touches on this idea of advocacy; Taylor had become confident in her position as a design researcher: because she knew her participant, she became his advocate and became protective of him.

Figure 1: Bram working with Inge on the project's interface, LUCA School of Arts, Ghent. Photo by Andrea Wilkinson.

> The first day, I freaked out. ... I had no clue about how to direct something like that with a person. I don't make things for specific people. I make things for groups or businesses or whatever. ... I've never made anything that's supposed to be so special to somebody and help somebody. And that freaked me out because I'm just, like, I've done design-for-good projects but this is for Bob. This isn't like a designing for a charity. This is, like, for him. So, it scared me a little bit and it scared me to ask for help because ... because it's like I know this person, my teacher doesn't really know him.

In another example, Digital Design students were paired with individuals from an underprivileged neighborhood in Ghent, Belgium. In this example, Anke reflected on working with Ilmer, a recent immigrant from Eastern Europe who was well integrated socially and currently working on setting up his mosque so that he could better support his community. In the interview, Anke enthusiastically reflected on not only how she felt about the initial meeting but also how rewarding the project ended up being to her as a person, not only as a designer.

Figure 2: After working with Bob for four days a week for a total of six weeks, Taylor gave Bob the design she had created for/with him. Photo by Andrea Wilkinson.

The first step was a bit odd for me. You had to contact someone but you only knew their phone number. No idea what he looked like, what kind of person it was ... I sent an SMS to him. I biked to his house and he gave me a tour of and told me about his mosque. At first we didn't really talk about the project but about him. ... I was invited into the mosque. I got tea from a woman, and she offered me cookies. I wasn't afraid, but there was a small barrier I had to cross. ... What I'll definitely take is ... I've been working together with Ilmer for a few months. Not that I'll meet him again per se, but his ideas regarding Belgium, about the environment he's in, about "the Muiden," I won't forget those. I'll remember his opinions. Not everybody can say they talked with an Imam! He had a very fresh outlook on the world and what happens in the world. It's not necessarily about the project but still something I'll remember; he was a fascinating man.

Instead of focusing purely on methodology, this workshop focused on reflecting on the experiences within the design research process that not only shape or influence the thing being made but also inform a designer's future practice.

Workshop Intention, Audience, and Outcomes

The goal of this workshop was to identify and articulate the value of working with individuals and how this might best be utilized within design education (and to what aim) as well as the potential of its use within industry. Drawing upon a collective brainstorm activity, the results were documented through an activity loosely based on MAP-it (see: www.map-it.be). This method helps to visualize discussions between groups and attempts to provide parity between the voice of different participants. The results from each step are gathered and visualized on the collective *maps*, or workshop documents.

The workshop grounded itself initially in the participants' own experience. As a group, participants reflected on and shared how individuals and their own real-life contexts have impacted their own design practices: profound experiences and insights that shaped (or continue to shape) their design ideology, approach, way of working, etc.

Moving from personal reflection to analysis, participants then analyzed a student's own experience. These student project stories detailed an actual student's project: their process, the methods they used, a description of the individual they worked with and what they made, as well as quotes in their own voice.

Building upon this student experience and the participants' own expertise, participants then identified what this approach offers design education, where this would best situate in the design curriculum, as well as propose best-cases in terms of organizations and people-groups for working in this individualized approach.

The outcomes of this workshop were documented by a local filmmaker and analyzed by the facilitator within the context of her doctoral research. The films created include an overview of the actions of the workshop (summary), interviews with participants reflecting on their experience in the workshop, as well as the potential for this approach within education and practice.

Danielle: Designing for one, Student Experience Summary

School	Course/Discipline	Class Setup	Location	Important to note
University of Missouri – St. Louis, USA	Graphic Design	5 weeks, 4 times per week 2 hours per day	18 x Offsite in care facility 2 x Classroom/Atelier	Participating required background check and needled test for TB

Student	Participant	Who is design for	External parties involved	Activities student carried out
Danielle level 2 of 4 years	Virginia	Virginia, carers and family	Family members and carers	Interview, discussion with family members, analysis of care home activities, singing together

Summary of what was made	How is the participant evidenced in the design that was made?
A student who already had a PhD in Psychology, Danielle was retraining to become a graphic designer. For Virginia, a person with dementia living in a skilled nursing facility, Danielle made a pack of 'favourite' cards. Danielle had seen that throughout the day carers tried to offer people 'favourite things' and used these over and over again as conversation starters. However Virginia wasn't able to share any of her favourites. This design hoped to fill this gap. If a carer had a few extra minutes to spend with her, they could fan out the card deck and directly begin with a favourite. This ranged from movies to hymns to sing. The cards provided conversation tips but also provided links to YouTube that the carer/visitor could watch with her. This idea also stemmed from the fact that Virginia was very amicable: 'everything was great and it's wonderful here'. Her movement into the care facility had been relatively easy, as she was good at transitioning since she had moved around a lot in her lifetime. From speaking with her family, Danielle learned that Virginia had always been someone who would 'go with the flow', "whatever you want to do" or "I like old songs, whatever you think." They appreciated Daniel's wanting to give her a voice. They shared in this notion that in her 'last years' she had earned the right to 'enjoy more' as she had always been passive and took care of other people. Danielle wanted to find a way that Virginia could engage in things that were meaningful to her, without having to remember or make decisions about what to do when asked. The cards, held together with a ring were colour coded with different categories and placed on a hook by her door.	All of the subject matter and content is related directly to Virginia and the activities and themes and activities available at Virginia's care facility.

Student Quotes

About the co-design process (mother and daughter): "So I thought OK, well maybe I'm helping both of them at the same time and I serve each of them in different ways."

About her participant: "My resident was Virginia and she was fantastic."

About relating to her own past: "Virginia kind of reminds me of her in some ways. But it was almost like OK, this is my chance to sort of... do it over, so to speak, because that was– I was quite young when that happened and I didn't always feel like going to see (my grandmother) because it was sort of unpleasant and she didn't remember who I was and it was boring... things like that. So it was sort of, I don't know, a cool experience to get to go...and visit with someone and actually, as an adult,... thinking about it from a different perspective."

About how it was different: "The thing I'll take away most ... is the idea of designing for a function as opposed to just it looks nice." "I thought far less about alignment or color or what little icons or graphics I might use or picking the pictures... It kind of encourages me to think about that in the future too not just does this look nice but does this do anything? Is this going to work the way I think it's going to work? And this notion of testing things was really cool to me too."

Figure 3: Example of student project summary

Figure 4: Workshop documentation. Photo by Andrea Wilkinson.

WORKSHOP RESULTS: TAKING IT FURTHER

Beginning with the self, participants in the Residue of Interaction workshop shared personal stories about the impact of individuals on their own design practice. One participant, for instance, shared

that her brother with learning difficulties had caused her to actively problem solve and design forms of communication from an early age, and another suggested that working with a local blind person within a class project had radically changed her perception of empathy and prejudice.

When participants moved from their own personal experiences to the experiences of students who had already designed for one (the student project stories), they suggested that the students had taken away more than skills; they had taken away experiences and real insights into designing for people. One suggested that her student appeared to develop a relationship with the user and that this relationship allowed for the student to work with real design constraints. Another suggested it revealed to her student the power of storytelling. One participant indicated that her student had learned the importance of primary research, and another expressed that his student had experienced the value of showing a deep interest in another person. Finally, another participant revealed that her student had realized that the computer was not the answer but rather just a tool.

The design and planning of the mapping included gray areas within the designing for one approach and welcomed reflections on the riskiness of it. In some cases, participants suggested that their own school curricula was not open enough for projects to fail and that for projects such as some of the examples within the workshop, the possibility for failure was real. Another group discussed student maturity and that working individually with people outside of the student's own life-context could be challenging. One group exchanged views about working within a user's own private home and how this held all sorts of risks but also offered high rewards and richness for the student experience.

At its core, the workshop discussed context: how context understanding can add value to a design proposition, how it grounds a student designer's confidence to make decisions. While discussing riskiness, participants also related the student's experience to that of their own students. Were their students having the same sort of experiences? Were they coming into contact with similar contexts? Were these insights being generated by other means? Was it similar to what they were teaching or

Figure 5: Participants discussing points during the workshop. Photo by Andrea Wilkinson.

was it different? If it wasn't yet being used, where could it be implemented? What courses could use this approach? The answers here were broad, from design history to motion design, from a year-long final-year project to quick-turn-around design research studies. Did this way of working prepare students for the future? Yes, they believed so. It helped prepare students to work with complexity and populations with shifting needs. It prepared students to look at ways to bridge the physical and digital by teaching them to analyze people's needs, wants, values, and patterns. Participants thought it broached the subject of a designer's core values by working authentically and by connecting these values to services.

The key takeaway from the workshop—as well as the interviews post-workshop—was the relevancy of bringing students in contact with diversity, challenges, the needs of real people, and how these confines allow design to be an action instead of an outcome. When asked about organizations or people-groups they thought might best suit this sort of approach, their answers ranged from homeless shelters to supporting local government to wicked problems to the elderly. The suggestions were social and community focused. Although participants were enthusiastic, they suggested that planning for such a student experience within rigid
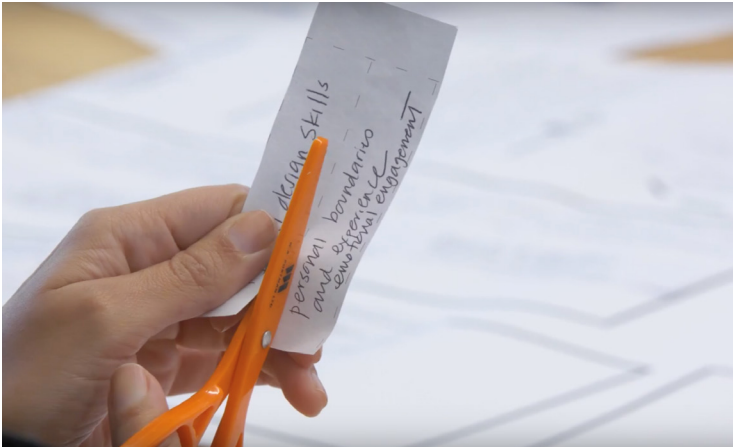
Figure 6: Participant adding his/her points to the mapping document. Photo by Andrea Wilkinson.

curricula structures would be difficult and that the effort involved in prepping for this level of interaction (i.e., the logistics of moving students from one place to the next as well as the ethical concerns of working with marginalized people groups) was challenging in and of itself. Challenging, but not impossible. Armed with new information about what it offered students, many participants suggested it was worth an attempt to make it happen.

The workshop served its purpose. It introduced a small, but extraordinarily critical and engaged group of design educators to the idea of *designing for one* within design education and it provided additional reflections from the position of design educator into the student's experience. This gathered material will be further analyzed within the ongoing doctoral research looking at how designing for one enriches the student experience. For more information, and to view the participant interviews, please visit www.designingforone.com.

If you or your school is interested in setting up exchanges related to this *designing for one* approach or if you are involved in or considering working within the subject area of dementia and design, please don't hesitate to be in touch with the design researchers and educators at www.dementialab.com.

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Communicating Design Research in Industry: Applying Design Research Methods to Address Challenges with Stakeholder Buy-In

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Keywords
stakeholder buy-in, industry practice, participatory design, business stakeholders, stakeholder engagements, strategic application, client deliverables

As design researchers working on industry projects, we advocate that incorporating customer understanding into the design of products and services is a recognized competitive advantage for businesses. Target customers are interviewed, observed, and even engaged in the co-design of end solutions. Design researchers within an organization, as well as external consultants, are employed because businesses today are investing in designs that work for their customers.

A search on LinkedIn[1] reveals an overwhelming number of open roles for designers with customer research skills. Design researchers determine the target requirements of an end solution via observation of—and engagement with—customers, perhaps even involving end users in the refinement and improvement of their designs. Listening, interpreting, and co-design have become important skills for design researchers, and we have developed a deep toolbox of research methods to help us in our goal of extracting and applying customer requirements to our designs.

PARTICIPATORY DESIGN AS A MINDSET

The participatory design (or co-design) mindset is one we have embraced within organizations as we aim to personalize products and services for our target customers. This approach aims to engage potential end users of our designs throughout the design process "to help ensure that the designed product/service meets their needs."[2] By including our target users in the design process, facilitating their involvement in co-creation with designers, we are

informing an end product or service that appeals to and connects with their needs.

THE BUSINESS STAKEHOLDER AS A PARTICIPANT

Understanding end user needs is not our only goal, however, as we also need to find a solution that makes sense for (profits) the organization. For this reason, we also often enlist their support in the development of the product or service for the end user.

In the early stages of a design project, we spend time collecting business requirements to ensure the designed product or service works for the business as much as it does for the end user. Articles discussing the task of combining business requirements with end user needs are extremely popular,[3] describing the challenge as balancing customer or user needs with business requirements. Whether we present this coordination of customer and business requirements as a slider, a scale, or a compromise, design researchers usually find themselves right in the middle. We are considering both groups' requirements throughout the design process and making compromises or looking for optimal solutions.

In the research phase, we employ similar approaches to gather requirements from business stakeholders and end users such as interviews and workshops (varying our questions and tasks to suit the audience). These findings help us to define our design goals and inform the designed product/service. The design process is applied to create the end product or service and the primary customer is the end user.
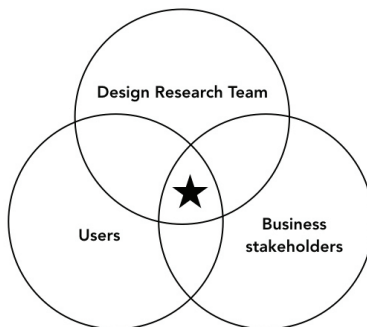
In participatory design, we often work with business stakeholders in addition to users to create an end product/service for the user.

Design Process Double Diamond
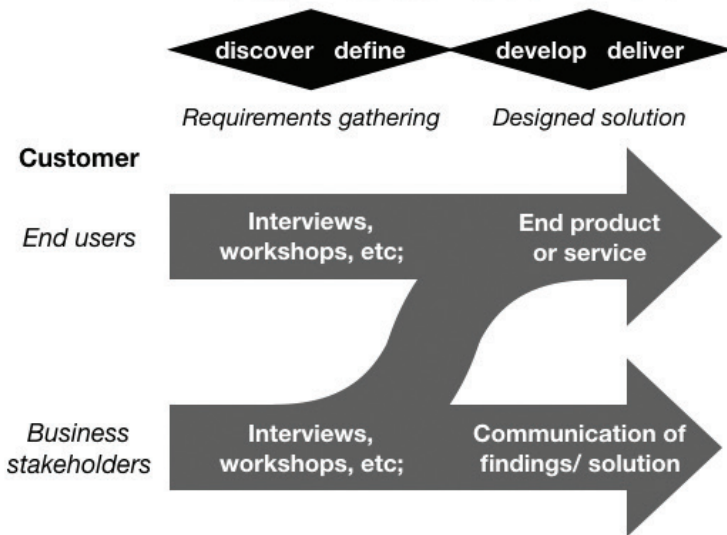
We follow two distinct design processes in parallel to cater to both end users and business stakeholders as customers.

However, a project typically requires that we are designing an additional set of outputs for the business stakeholders we are working with. This solution is separate to the end product or service. First, we are asked to communicate what we are doing throughout: informing why and how we are doing things and explaining why our product/service (for end users) ultimately lands where it does. Additionally, we produce an end report, strategy, design guidelines or other tools to summarize and justify our research. The unique designs for our business stakeholders may include engagement or communications plans, research findings reports, strategies or guidelines, and/or a number of other artifacts and presentations to help the stakeholders understand, buy into, develop and sell the proposed end user solution. As a result of this, business stakeholders then become a unique set of customers that we need to design for.

The design of our reports and other tools for business stakeholders could then be considered a parallel design process occurring alongside the development of the end user product or service. If we

apply the UK Design Council's design process double diamond stages (Discover, Define, Develop, Deliver) as a model, we can see how we are actually following a unique process for the business stakeholders that runs parallel to the creation of our end user solution.[4]

We have two final solutions for two distinct customer groups: 1) a designed product or service for the end user and 2) a communication design for business stakeholders that ensures internal adoption of our proposed end customer design. The second stream is arguably more difficult than the first in some instances. Business stakeholders—while often positive and helpful—are not typically well versed in the design process and all its messy glory. Facilitation of understanding and acceptance of the design is yet another task we take on as design researchers.

THE BUSINESS STAKEHOLDER AS A CUSTOMER

In the communication of our research process, findings, and recommendations within an organization, an experienced design researcher will recognize that our non-linear approach to design can cause uncertainty and stress to those unfamiliar with it. Key business stakeholders are typically results oriented and seek frequent progress updates to justify their investment. They often ask for the answer in the early stages of a design project and an explanation of what we are doing to get there. This helps them to understand and provides reassurance to them that we know what we are doing. Our openness to multiple solutions contradicts this orientation and can lead to a degradation of trust in us as professionals if we are not constantly aware of—and working to mitigate—this difference in perspective. To ensure our design is supported within the organization and reaches production, we need to establish trust from these stakeholders and expect that they will want to know how we came up with our findings and/or solution.

A significant portion of our role therefore becomes stakeholder management: metaphorical hand-holding, encouraging a trust in the process as we scramble down a non-linear path of which the answer is unknown and journey uncomfortable. I have been a witness to many projects pulled in competing directions by stakeholders, losing intent and focus, due mainly to a lack of understanding of and/or faith in the process.

Conversely, I have found that stakeholder participation in the design research and reporting, along with the provision of design tools, aids with buy-in and adoption of any proposed research findings and designs. If planned well, stakeholder participation can help us. If not planned, or if we don't consider stakeholder expectations related to the results of their participation or education, we can fail in another way. As suggested above, this engagement is a design project in itself that needs planning and preparation to ensure appropriate and effective results.

My proposal, then, for a workshop at the Decipher conference in September 2018 was to begin to examine the process of this separate design process for our other group of customers: business stakeholders. I asked how the designed solution for business stakeholders could benefit from the rigorous design process we follow for our end user design. I wanted to specifically explore with a participatory design mindset, as I believe it enables client teams to understand and absorb the research findings we provide, making it more likely that they will take ownership of the recommendations and end solution.

STRATEGIES FOR DESIGNING FOR BUSINESS STAKEHOLDER ENGAGEMENT AND ADOPTION OF THE SOLUTION

The Decipher workshop group was made up of a mix of design research educators, students, and practitioners. This provided a minimal level of understanding of business stakeholders but a valuable diversity of backgrounds and opinions and a high level of knowledge of design research methods and approaches. As a facilitator, I provided the required background knowledge on likely stakeholder requirements and behaviors to the educators and students, which allowed us to then discuss as a group the characteristics relevant to engagement and communication solutions.

The first task was to identify ways in which we might help a stakeholder to connect to the initial end user research and take ownership of research dissemination as a result. I suggested a participatory design approach and asked what other strategies participants had used or would try. The Decipher workshop participants proposed several approaches borrowed from
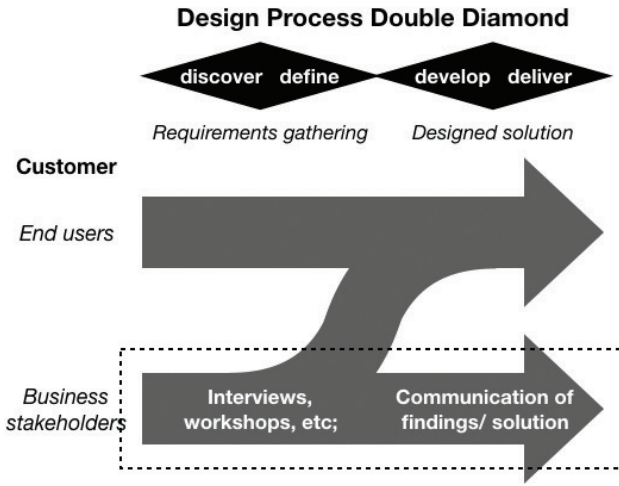
marketing and education. Key suggestions included:

1) Package the story in an engaging way (show results to get buy-in/ generate excitement).

» Set the scene with challenges.

» Show data as evidence/proof.

2) Make use of any identified research advocates to educate other stakeholders.

» Give these advocates tools to enable sharing and education.

3) Make it personal (connect to the stakeholder's needs).

These general themes were agreed on by the group and influenced by a mix of experience and education. Although the strategies don't explicitly request involvement of stakeholders in the design process, they support the belief that additional understanding of the stakeholders' needs and values is beneficial in gaining support of our design research. It is the third point in particular—the personalization of our engagement, reporting, and tools—that requires an identification of our business customers' needs and an understanding of the possible varying types of stakeholder customers.

In the same way we might apply any of our various research methods in seeking a deeper understanding of end users to inform more personalized experiences, we can expect that seeking a

deeper knowledge of business stakeholders will help us to improve our designed deliverables for them. If we understand their goals, motivations, and needs, we can design our outputs to support them. We should consider the methods and tools already used in user research as a starting point.

IDENTIFYING TYPES OF BUSINESS STAKEHOLDER CUSTOMERS

One of the ways we often attempt to make sense of, and organize, the information that we find in our research is the categorization into types of customers based on preferences, needs, and behaviors. We can then design an engagement strategy and custom solutions for the various types of customers that are more personalized than one generic solution. So, naturally, our discussion in the workshop moved toward hypothesizing the ways in which we could categorize business stakeholders to help us to meet their varying engagement and/or communications needs.

I first suggested a common way of dividing business stakeholders via their level in the organizational hierarchy (assuming there is one) and proximity to the customer. Some version of this categorization is often used in the recruitment of business stakeholders for input and also in the communication of findings in businesses today. For example, there might be a different pack and presentation addressed to senior stakeholders vs. operational stakeholders. There are four main groups I often consider, as follows:

1) **Project owner:** Responsible for commissioning the work, setting research goals and disseminating the results within the organization.

2) **Customer-facing staff:** Interact with customers daily and can provide a bridging perspective of both business objectives and customer needs.

3) **Operational stakeholders:** Responsible for utilizing the results of the research, applying them to process updates and new product designs.

4) **Senior stakeholders:** Have contributed to strategic objectives, a vision, or crucial outcomes regarding this research. Generally, somebody the project owner reports to.
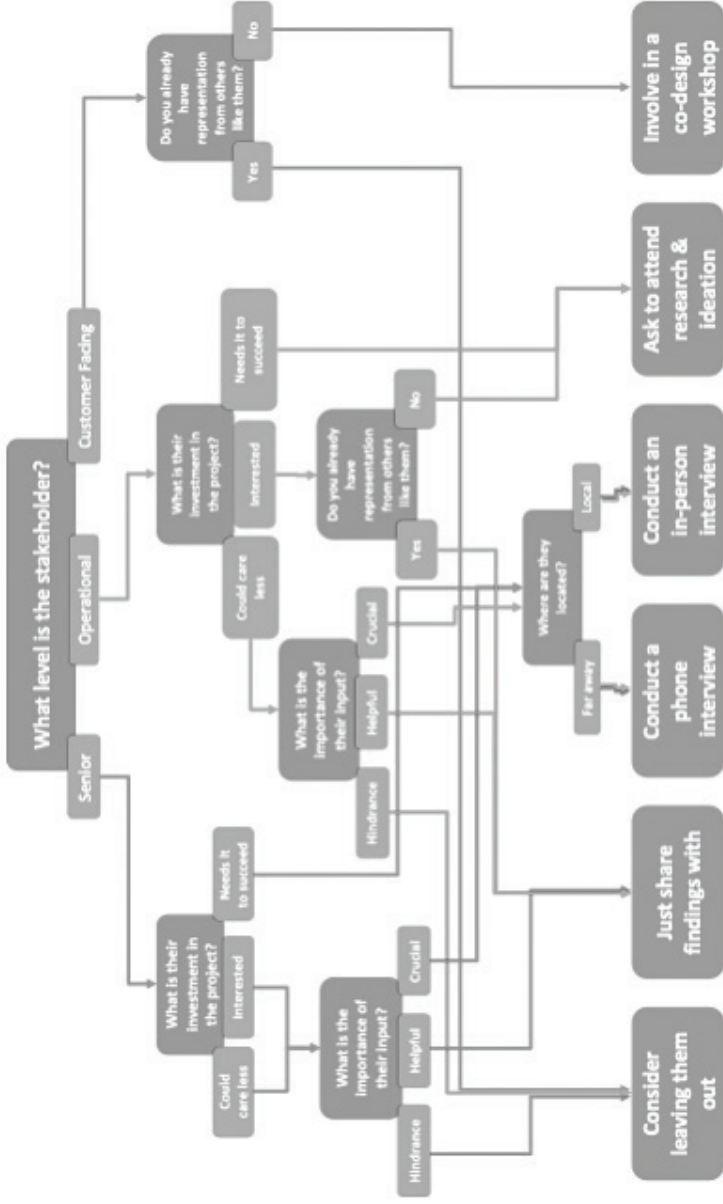
Example stakeholder engagement approach based on level within an organization.

This categorization works to some degree, because a stakeholder's role in the business can inform a base level of needs and communication preferences. A stakeholder's proximity to the end user or customer potentially also gives insight into how much they understand about their customers' needs. It is a good start when there is no other information to go on and can guide as to how to engage individual stakeholders in the research.

We found that what the above categorization lacked was an indication of a stakeholder's understanding of our design process and their commitment to supporting, engaging with, and advocating for the research findings within their organization. This was thought to be a key characteristic required of stakeholders in effective dissemination and adoption of research findings. As a result, we began a discussion of stakeholder customer types based on advocacy or appreciation of our approach. We considered that a stakeholder at the following levels of support might be characterized as such:

» **Level 0:** Stakeholders who believe our process is detrimental.

» **Level 1:** Stakeholders who don't care about the process and/or solution.

» **Level 2:** Stakeholders who understand our process and believe in our solution but lack knowledge or ability to sell it to others.

» **Level 3:** Stakeholders who are/can be advocates and help us sell our solution.

Discussion progressed to behavioral characteristics at each level that we could use to identify a stakeholder and how we might support them. We specifically focused on those that were relevant to our overall goals of educating stakeholders and disseminating research findings within an organization. Conversation also turned toward a strategy for engaging each type. Identifying characteristics and strategies as follows:

» **Level 0:** Stakeholders who believe our process is detrimental.

> › **Identifying characteristics:** Refusal to participate or actively voicing opinions against the design process.

> › **Strategy:** Recognize these stakeholders' needs and blockers that are keeping them from supporting the design. Speak to them individually and personalize communications.

» **Level 1:** Stakeholders who don't care about the process and/or solution.

> › **Identifying characteristics:** Indifferent attitude. Perhaps they show up to meetings but don't contribute. Not against what we are doing but not providing assistance in progressing through the design process.
> › **Strategy:** Uncover their agendas or goals in their own roles and relate our intentions to those. Educate on the benefits of design research and how our findings contribute to more effective design.

» **Level 2:** Stakeholders who understand our process and believe in our solution but lack knowledge or ability to sell it to others.

> › **Identifying characteristics:** Observe or participate in research sessions without hesitation. Have a desire to learn and are open-minded about new approaches to problem-solving. Little political influence in the organization.
> › **Strategy:** Equip with data and tools to help them sell. Teach them how to answer questions from skeptics.

» **Level 3:** Stakeholders who are/can be advocates and help us sell our solution.

> › **Identifying characteristics:** Active participation in recruiting other stakeholders for research sessions. High political influence in the organization.
> › **Strategy:** Emphasize their importance in the dissemination process. Enlist to help persuade "non-believers." Learn from them (how do they have so much influence?).

These strategies are not necessarily new, as stakeholder management and engagement are popular topics in business. However, the exercise helped workshop participants to realize:

1) There are multiple effective ways of categorizing stakeholders to help us design for them.

2) There is not likely going to be a "one size fits all" design for our stakeholder deliverables.

And then perhaps a third follow-up realization: we had our work cut out for us! Our projects often already have tight budgets and timelines, so we have to be careful how much more work we create for ourselves.

ADAPTING MODELS FROM EDUCATION

As an unforeseen benefit of workshopping through these ideas of engagement and adoption with a room full of design educators, we found additional tools and theories related to student engagement and adoption of information to borrow from. Referring to Technology Strategist David S. Rose's receptivity gradient,[5] a few participants hypothesized that this could be another useful way to classify stakeholders. The model considers a student's "readiness" toward reception, support, and ultimately advocacy of new information. As design researchers often find themselves as teachers of the design approach within industry, this model is a slight variation on the previous categorization based on support for the design process. The levels of readiness offer yet another way to consider stakeholders.

Rose's model considers 5 stages of increasing readiness to learn, act, and advocate that we can identify through conversation with a stakeholder and with guidance from the project owner. This can help us to develop a "sales pitch" for our approach and findings and determine the appropriate level of involvement and education of the

Not ready to learn	Ready to learn	Ready to hold an opinion	Ready to act	Ready to advocate
Not willing to listen or consider any advice (information) that may be given or offered.	Willing to take a step and consider options and opportunities that may be available.	Researching, comparing, contrasting, and evaluating information.	Willing to try out an option or process.	They reflect on their individual experience to inform a larger collective.

Adapted from David S. Rose's receptivity gradient: the levels at which a person is "ready" to learn and act[6]

stakeholder. Our stakeholder engagement strategy might therefore look quite similar to one an educator might apply to a classroom.

One workshop participant mentioned that educators often apply some version of an "80/20 rule" to educating a classroom full of people: spend 80 percent of your time on the 20 percent who are struggling the most. This suggests we work most with those in the stages pre-"Ready to act."

Others suggested that the "Not ready to learn" was perhaps a group we should let go while focusing on the "ready to learn" type and beyond. It was suspected that the "Ready to advocate" type could be utilized to help us with the "Ready to learn," "Ready to hold an opinion," and "Ready to act" types. As the strategy would likely come down to personal and situational preferences, I stopped the discussion here.

The conclusion of these discussions considered the categorizations developed into a set of design personas to help us in creating more personalized stakeholder experiences with our design research project.

MODELS OF AND MODELS FOR

To end the workshop, we did a small amount of brainstorming around toolkits and strategies for the varying stakeholder types that catered to their needs, motivations, behaviors, and preferences. We considered relevant deliverables and services for each type.

I gave examples of the products that we currently provide to business stakeholders, which could be interpreted as models of our research findings. Reflecting on Geertz's discussion of the two roles that a model can play—a model *of* and model *for*—I noted that most of our current designs are models *of*.[7] A model of shows what something is: we design things such as Customer Experience Maps, User Personas, and Target State Experiences to depict what we found in our research or what we think the future should look like based on that research.

A model *for*, however, instructs on how to do or see something: a designed guide that demonstrates how a stakeholder can participate

in, digest, or disseminate the research. We agreed that there was room for development in this area. Questions we left on were:

» How might we design models *for* stakeholders?

» Can we use participatory design to embed these models in the design journey?

» How do the models work together? (think systems, strategy, education, toolkit)

Suggestions included more collaboration opportunities, such as teaching stakeholders how to run their own workshops, in which they design for their users and learn at the same time. Running their own workshops might improve their empathy and understanding, increasing their ownership of the project (though might run a risk regarding research integrity). Also, a "design residency" was mentioned, in which we educate stakeholders in basic design principles and train them to think in new ways. The aims of this were more targeted and relevant to the project at hand than blanket organizational initiatives such as "Design Thinking" training.

Stakeholder participation inevitably leads to questions around how we might manage stakeholder qualifications for participation, analysis, and interpretation related to research, which becomes yet another consideration in the design of our end solution for business stakeholders. This conversation needs to be continued.

RESULTS

The intent of this paper and the workshop was to initiate exploration of the business stakeholder as a distinct customer group in the design process, treating the design research experience and outputs as a unique service and product set created for the business customer. Applying the same rigorous process and methods we use when investigating end users, we recognized that we could improve solutions for business stakeholders by applying a participatory design approach to the parallel design journey of the research deliverables and dissemination within an organization.

Though the short amount of time we had for the workshop limited our exploration (we ended up with the bulk of time spent on stakeholder management discussions), we took the first steps

toward the consideration of business stakeholders as a target customer to design for.

General consensus at the workshop was that this is a worthwhile topic to explore, and progress was made as to how we might develop customer types within the larger set of business stakeholders, to target them with personalized engagement and communications and unique products and services. Additionally, the types could guide us in enlisting certain stakeholders to participate in the advocacy and adoption of our results.

As an unexpected bonus, we realized the similarities between engaging and educating stakeholders within a business and educating students in a classroom. We deduced that by addressing stakeholders based on their level of receptivity to learn, we can act as educators in industry in order to gain buy-in of our findings and design solutions. We can employ advocates to assist us in disseminating our findings and solutions as a way of ensuring end user products and services are actually developed and also that they stick to specifications that align with our research findings.

THOUGHTS ON FURTHER RESEARCH

Building on the stakeholder types, we could conduct deeper research on business stakeholders to create a set of personas and document the customer journey of a business stakeholder engaging in the design process for the first time (including the identification of pain points and opportunities). This would allow us to develop a set of personalized deliverables based on a stakeholder's support of our research. We could look at things like report formatting and style, medium, and delivery approach for each type of business stakeholder. More tools that represent models for could aid in an overall strategy to educate stakeholders and gain buy-in.

THOUGHTS ON APPLICATION IN THE CLASSROOM

As an extension to current teaching of the design process, students should be introduced to varying business stakeholders as the audience(s) to design communications for alongside a project. Additional design research assignments could be considered in which students focus on the business stakeholder as their customer at various stages of the design process.

- How might they communicate their work to stakeholders at various stages of completion?
  - » What communications and deliverables can they provide at each of these stages?
- How do deliverables change for stakeholders at differing levels of understanding and "readiness"?
- How does engagement change for these different levels of stakeholders?

The concept of stakeholder personas could be introduced with which students could be asked to create a Stakeholder Engagement and Communication Strategy with accompanying deliverables. Perhaps there may even be opportunity to introduce students to actual stakeholders of varying levels of understanding and readiness to engage.

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The Therapeutic Benefits of Reflecting on Research Questions: Leveraging the NCredible Framework for Better Research Practices

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Keywords:
design research, research strategy, research mentorship, stakeholder collaboration

INTRODUCTION

Design research practices embedded in business contexts have matured to a problematic inflection point. Called upon as a means of finding answers to human complexities, research is often measured against misappropriated metrics of success. Time, money, efficiency, and return on investment have been artificially applied to demonstrate its value. While these metrics are meaningful to businesses and institutions, they can diminish the credibility of the processes that get to human descriptions.

This false tie leads to tendencies behind research practices that no longer service the domain of design research; rather, they hurt it. Leading with method, over-simplifying complex human dynamics, misaligning questions with objectives, and setting unrealistic expectations of data gathering are just some of these responsive tendencies. Research can no longer be a gratuitous technique, conjured to help others get their work done. Research must assert its strategic presence.

In this workshop, the facilitators shared a quickly consumable framework that helps researchers establish that strategic lens. This workshop revealed a demonstrable approach for permeable success of research as a strategic practice within an organization. Distributing the research mindset, teaching the mechanics of good study design, and providing a "parking lot" for as-yet answered

Figure 1: Attendees shared their research challenges to introduce themselves, the facilitator noted common themes, and attendees developed an immediate bond over these challenges. Photo credit: twig+fish research practice.

questions are just some of the benefits attendees gleaned and quickly applied to their own contexts.

APPROACH AND ATTENDEES

The three-hour workshop was attended by 15 participants of the Decipher 2018 conference in Ann Arbor, Michigan. These attendees represented academic, applied, and government organizations. The workshop was positioned as a means of supporting design research and emphasized the benefits of its ability to gather knowledge and align learning opportunities. One facilitator led the workshop, which centered around a 2 x 2 matrix that explores the inputs and outputs of research.

First, attendees introduced themselves (name, role, location, organization, and biggest research challenge). Figure 1 shows the challenges Decipher 2018 attendees shared. Second, the facilitator introduced the NCredible Framework and a case study "client" for which attendees were given questions. The case study client is an actual non-profit organization, and they were asked to share any and all questions they had around the people they serve and the offerings they provide.

Figure 2: Attendees discussed, debated, and placed questions onto the NCredible Framework (done entirely by attendees with facilitator guidance). Photo credit: twig+fish research practice.

After attendees became familiar with the framework, they were given up to five questions generated by the non-profit and asked to discuss and then place their question against the 2 x 2 matrix. Other attendees could debate and place the question in other places but were tasked with providing a rationale for doing so. As more and more questions were placed on the matrix, the facilitator began to explain simple mechanics, such as how a question is written can influence where it is placed on the matrix. Attendees can then become less facilitated as they place their questions on the matrix—the activity became increasingly group directed. Figure 2 shows a workshop attendee reading a question and debating the placement of the question on the NCredible Framework.

Attendees then discussed common research patterns that are revealed by the NCredible Framework. These patterns are based on the facilitators' experiences working on a variety of research programs. Attendees reflected on which research pattern best represented their current practices. Figure 3 shows the facilitator describing the common research patterns for attendees to consider.

At the end of the workshop, the facilitator was told that the framework was easy to understand and easily applicable to their varied contexts. Beyond that, attendees felt a sense of relief and closure at the end of the workshop—as if the most ambiguous
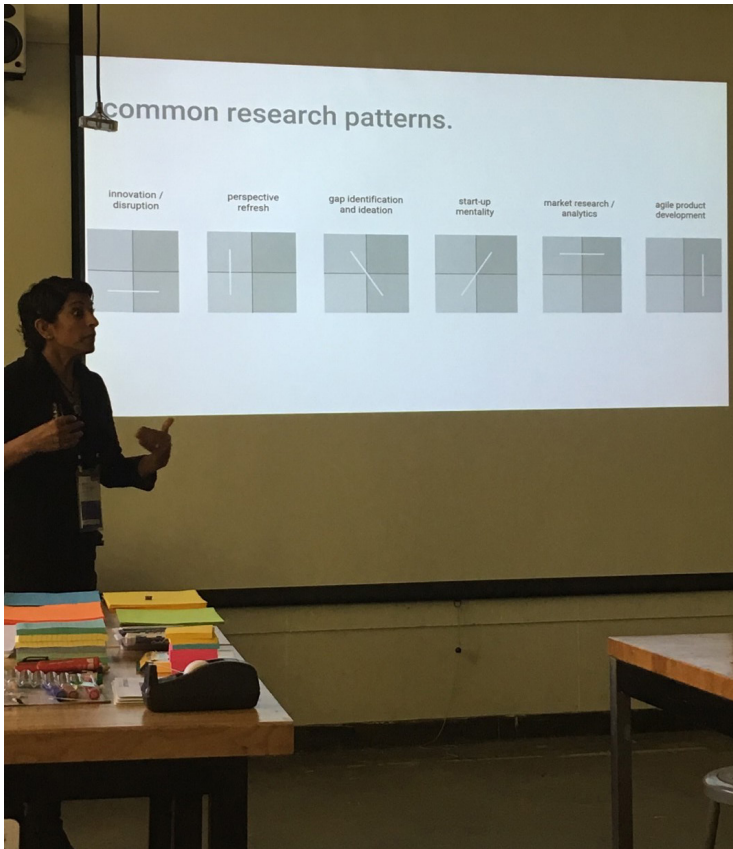
Figure 3. Attendees discussing, debating, and placing questions onto the NCredible Framework (done entirely by attendees with facilitator guidance). Photo credit, twig+fish research practice.

barriers to research could actually be addressed. Some attendees noted that the workshop as like a "therapy session for researchers."

THE NCREDIBLE FRAMEWORK

Inputs of consideration are people's "agendas" going into a research engagement. Introspection is one agenda that a team may have going into research—essentially, using research as a way to establish new goals and ways of thinking. The objective of incorporating research results into existing agendas is another possible input into research.

Research outputs describe the "service" a study will provide to the inputs. Research can serve to inspire a team by tapping into the stories people (i.e., users, customers, and other beyond). Research can also inform an offering by providing details that can shape and drive solution development. Figure 1 portrays the NCredible Framework, which is printed on a poster as an empty 2 x 2 as well as with descriptions of each quadrant as a reference for attendees.

When inputs and outputs are taken into consideration, four scopes of learning opportunities are revealed. These learning opportunities describe the kind of questions that must be asked to address the study's inputs and desired outputs. These scopes of learning are: Discovery, Exploratory, Definition, and Validation.

Discovery Research helps reveal objectives and is meant to inspire a team. Outputs of Discovery Research are topics of interest and descriptions. Common questions in Discovery are those that describe subjective or taken-for-granted terms/ideas and those that help teams address identity shifts in design.

Exploratory Research incorporates research outputs directly into existing objectives but is still open enough not to be driven by the offering. Exploratory Research results in thick descriptions of realities and aspirations. Common questions compel a variety of characteristics of a single topic and can often result in actionable design tools such as personas and journey maps.

Definition Research starts to look at the offering (i.e., product) in a more focused way but is still open enough so as not to be hindered by existing objectives. Definition Research generates new ideas and solutions. Common questions are reflexive, asking the team "how might we..." accomplish a particular solution in a way that meets the requirements and characteristics needed by people.

Validation Research brings clarity to the offering. Validation Research provides tactical answers to offering questions, often resulting in binary decision-making. Common questions compel a yes/no response or whittle down possibilities to ideals.

DIFFERENT CONTEXTS, SAME PROBLEMS

Attendees felt the Decipher Conference was more applicable for academic contexts but appreciated the "real-world" utility of the

INCORPORATE
drives objectives

EXPLORATORY
RESEARCH

realities and
aspirations

VALIDATION
RESEARCH

answers and
decisions

INSPIRE
learn from people

INFORM
learn about offering

DISCOVERY
RESEARCH

topics and
descriptions

DEFINITION
RESEARCH

ideas and
solutions

INTROSPECT
reveals objectives

NCREDIBLE FRAMEWORK V2.0
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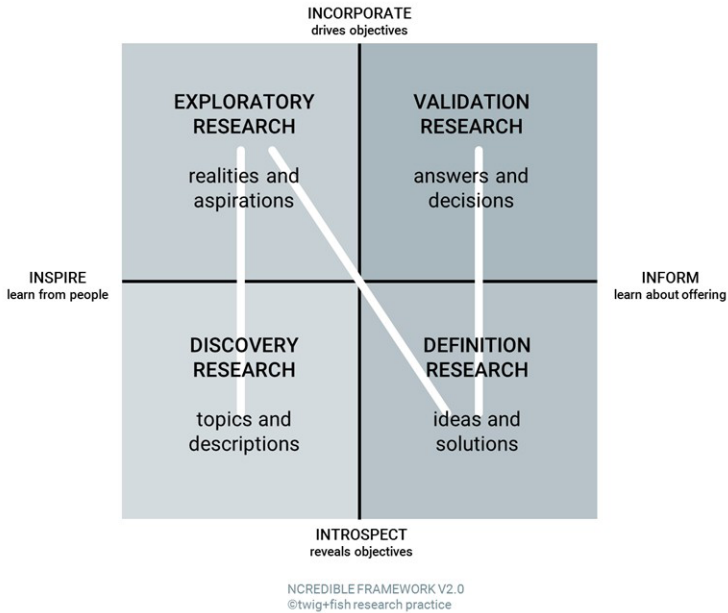
Figure 4: The NCredible Framework, the central tool around which the workshop discussion and activities are structured. © twig+fish research practice.

NCredible Framework. Attendees with academic backgrounds expressed surprise that in applied contexts research is often overlooked and that practicing researchers are actively seeking frameworks that help them position the potential power of research.

During introductions, attendees shared their names, locations, roles, and their biggest research challenges. Despite the varying backgrounds and professional contexts of attendees, all participants expressed two universal barriers to executing credible research. These universal barriers are:

- Resources. Time, budget, and people-power are lacking in all domains in which research is beneficial.
- Mindsets. Outside of academics, research is seen as a "means to an end" or "something that helps other people (i.e., designers, makers) get their work done."

Each of these barriers presents a set of symptoms that can be easily identified in the NCredible Framework Workshop. The way a

question is asked is particularly revealing of research barriers and can include:

Confusing people questions with product questions. Resource and mindset constrained organizations tend to always pose questions in the context of their offering. The assumption is that all unknowns about an offering or the people it serves must be contextualized to the solution, when in fact solution-agnostic questions are just as useful to ask.

Difficulty matching a question to a lens of inquiry. The same subject of interest can be understood and described in any of the study scopes (Discovery, Exploratory, Definition, or Validation). Simple wording issues, especially when communicated across teams, can be detrimental to the intended asker's actual desires. The spirit of the question a may be lost.

REFLECTION AS A SOLUTION

The facilitators then claim that a quick exercise to publicize and scrutinize these questions can lead to more credible study designs. The central claim is that if an organization can simply take the time to reflect on the intention of their questions, they can craft more meaningful study designs that align with design ends.

Reflection moments, such as the NCredible Framework Workshop, require certain characteristics to be successful. These characteristics of effective reflection, which were apparent at the Decipher 2018 Conference, are commiserating, externalizing, deconstructing, and roadmapping.

Commiserating. The NCredible Framework Workshop allowed attendees to openly share and relate on key challenges and tendencies that drive their research practices. Once all attendees recognized they were facing the same challenges, they felt disarmed and ready to dig deeper into why these bad habits exist.

Externalizing. The NCredible Framework Workshop provided a platform for attendees to get their thoughts out of their heads and onto a public visualization. Attendees remarked that the central tool provides a physical milieu to place their thoughts, which democratizes the question-asking step in the research process.

Deconstructing. The NCredible Framework Workshop permitted attendees to dig deeper into the intent of a question and the wording of a question. Attendees realized that oftentimes, in a practical setting, questions posed to researchers are either loaded with assumption or lack the context to understand the spirit of the question. The framework can help prevent shallow transmission of questions to researchers.

Roadmapping. The NCredible Framework Workshop helped attendees imagine a path forward. Reflection always runs the risk of exposing teams to vulnerable thoughts that result in second-guessing, that is, unless a path forward is described for them. Attendees were able to see how they can think about the broader potential of research in their organization, where they are today, and where they hope to be in the future.

CONCLUSION

Reflection moments can be a therapeutic experience for researchers, and the NCredible Framework Workshop is one such moment. If team members allow themselves time to reflect, they are more likely to address blind spots and assumptions that can color a credible study design. Because nearly all researchers face the same challenges of resource constraint and mindset barriers, they can all benefit from a framework like NCredible.

Research *in* and *through* Design: Prototypes as Forms of Investigation to Explore Energy Efficiency in Low-Income Communities

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INTRODUCTION

This case study explores the changing nature of design practice through a project focused on the sociotechnical system of energy distribution and consumption. The case involves a diverse set of stakeholders and variables that constitute public and private sector efforts to drive persistent gains in energy efficiency (EE). As such, the case reflects a central theme of AIGA Designer 2025 that "Design challenges exist at the level of systems and involve elements and forces in constantly changing relationships." Specifically, the challenge posed to designers by utility provider Peoples Gas and their EE implementation contractor, Franklin Energy,[1] was to identify ways to increase EE program effectiveness within low-income communities in Chicago with the ultimate goal of scaling up viable design solutions. Phase 1 of the project involved a multidisciplinary prototyping course of design, business, and engineering students at Illinois Tech's Institute of Design. Phase 2, a graduate practicum, was tasked with validating and developing one of the Phase 1 solutions.

The complex nature of energy production, delivery, and consumption and utility-funded EE programs as a sociotechnical system mirrors another theme of AIGA Designer 2025. The diversity of stakeholders, including federal, state, and local public and private sector actors combined with a range of legacy industrial and emerging digital technologies constitute an ecosystem in constant flux. Technological development within the system is uneven. A contributing factor to the complexity of this case is the multidisciplinary nature of the Phase 1 and 2 project teams that required accommodating different ways of thinking and doing research and integrating new forms of knowledge, skills, and tools to explore its many-layered dimensions.

Figure 1. The low-income housing landscape

BACKGROUND: A BRIEF HISTORY OF UTILITIES AND ENERGY EFFICIENCY PROGRAMS IN ILLINOIS

At this point it is important to note that electricity and natural gas service consist of three parts: 1) generation/production, 2) transmission, and 3) distribution. The distribution company is what is commonly referred to as the local utility. Until the mid-90s, utilities were regulated monopolies. Customers had no say in where or from whom their local distribution company purchased their electricity or natural gas. Often times utilities also owned generation/ production companies or the utility and generation/production companies were subsidiaries of a larger holding company. This

closed system allowed electricity prices to rise unchecked until consumer advocates were successful in shepherding the passage of The Illinois Electric Service Customer Choice and The Rate Relief Law in 1997—a year when Illinois saw some of the highest rates in the country. This legislation effectively separated the three parts of electricity service (generation/production, transmission, distribution) and introduced consumer choice to the market. Utility customers can now choose to receive their electricity from any of the retail electric suppliers (RESs) registered with the Illinois State Commerce Commission. By allowing customers to choose their supplier rather than the utility choosing for them, the role of the utility company was effectively reduced to that of the delivery person and nothing more. Amendments to the Public Utilities Act, also in 1997, enacted the same changes for natural gas.

To further protect consumers from rising energy costs, states such as Illinois require electric and natural gas utilities to administer EE programs and meet annual energy savings targets. The rationale is that requiring investments in EE will reduce direct and indirect costs to consumers through two means: by preventing the future environmental impacts of the now-avoided energy consumption and by eliminating or delaying the need for new generation, transmission, and distribution infrastructure—the costs of which would be passed on to the consumer by the utility. Essentially, the state requires utility companies, such as Peoples Gas, to convince their customers to use less of the product they are paid to deliver.

To address this challenge, utility companies have initiated a suite of EE programs offering free and discounted energy-saving products and services. Implementation of these programs, often contracted to third parties such as Franklin Energy, have been successful in some markets. However, in low-income communities[2] where a range of issues complicate outreach and implementation, Peoples Gas, other utilities providers, and contractors like Franklin Energy have found that EE programs suffer from disproportionately low participation rates.

THE INITIAL CHALLENGE

In fall 2017, Franklin Energy, a for-profit organization that develops and implements EE programs for gas and electric utilities

RENTER IS ENERGY BURDENED	RENTER HAS NO CONTROL	PROPERTY MANAGER IS THE KEY
A household is energy burdened when they spend more than 6% of their income on energy. Low-income households tend to spend up to 13% of their income on energy	Buildings are old and centrally heated. Rent includes utilities. Property manager controls the temperature and pays the gas bill for the whole building.	Property Managers connect with all the stakeholders in the EE ecosystem. They are the main decision makers and control energy usage.

Figure 2. Based on secondary research the Multifamily Team developed this hypothesis.

throughout the United States and Canada approached Illinois Tech's Institute of Design (ID) and Stuart School of Business with the challenge to help them rethink their current EE programs, particularly as these programs were introduced within low-income communities. Although the client was initially interested in arranging a student competition, they were persuaded over several meetings that a graduate course involving a mix of business, design, and engineering students had the potential to produce a more innovative outcome. Despite the challenge of moving in what was for them a new direction, the client agreed.

The Institute of Design convened a multidisciplinary course comprised of design, business, and engineering students to prototype alternative solutions in a Phase 1 approach to the challenge in spring 2018. Three student teams focused on three distinct approaches to the stated problem of low pick-up rates for EE programs within Chicago's low-income communities. The areas of focus selected by the student teams were multifamily dwellings, youth programs, and small businesses. The three lenses selected by the teams created three distinct perspectives from which to explore the meanings ascribed to EE within low-income communities and attitudes and behaviors around energy and energy consumption overall. The teams conducted field research to identify physical and invisible barriers to EE within the domains of affordable multifamily housing, small businesses, and education in low-income communities.

Phase 1 Process and Outcomes

The entry process and flow barriers for multidisciplinary teams in Phase 1 were challenging. Care was taken to balance the

disciplinary backgrounds and skills of team members. Each team experienced the usual process of "forming, storming, and norming" but with the added complication of working to integrate a diverse set of skills, tools, work processes, and knowledge cultures. Negotiating shared understandings took much of the limited time students were able to devote to the project. Faculty mentors assisted in this process, but teams were encouraged to work through these dynamics as much as possible on their own.

Prototypes as Boundary Objects and Forms of Investigation

The client perspective was transformed during multiple briefings over the semester. Because Franklin and Peoples were unfamiliar with the process of design-led innovation, each briefing was a learning opportunity and a lively exchange of information between the teams and clients.

Through the five briefing sessions, the student teams were able to learn which strategies and tactics were successful, and not so successful, for collaboration.

The teams' initial insights and the diverse team lenses presented the clients with completely different perspectives on approaching and understanding what they considered the problem of pick-up rates of EE programs in low-income communities. Although low-income households have a disproportionately high energy burden compared to household income, the usual methods of "selling" EE was not effective. The failure to adopt energy-saving devices among households in this segment required a different approach.

Each team developed prototypes as forms of investigation to deepen their understanding of study subjects and their daily lives, and other stakeholders, and to evaluate and push ideas and concepts forward. The prototypes served as boundary objects, conceived of as a "shared space, where exactly the sense of here and there are confounded. These common objects form the boundaries between different groups through flexibility and shared structure—they are the stuff of action."[3] The value of a prototype-as-boundary object is its interpretive flexibility, "the capacity of the object or 'thing' to inhabit a space between social worlds where it is 'ill-structured' (i.e., having a malleable form) and accessible as needed by local groups that have only a vague notion of its commonality."[4]

The Multifamily Team

For the purpose of this article, we will focus on the multifamily team as an example of the process and final outcome presented to the client. The initial approach of the multifamily team was to focus on understanding tenants in properties identified as meeting the AMI description of low income. This approach quickly proved untenable. It was difficult to get access to individual tenants. Given the time constraints, interviewing individuals would provide a very limited sample. EE is intangible: people don't see it. People living on fixed or low incomes have many more pressing things to be concerned about. Finally, many tenants have no control over usage of natural gas devices, especially boilers used for space heating, which are controlled from a central location. The cost of in-unit gas appliances is typically included in the rent. Because tenants never see a gas bill, they do not consider it as an expense or as a way of saving money.

Given these factors, the team turned its attention to property managers (PMs), because they play a significant role in multifamily residences, especially in building maintenance and the management of utilities. Through field research, interviews, and discussions with the client they developed a set of insights, the most meaningful being that property managers are extremely busy: they are responsible for multiple tasks, from collecting rents to paying bills and dealing with maintenance and repairs. Buildings in low-income communities are usually some of the oldest building stock and much less energy efficient than newer construction. Although property managers are concerned about energy costs, they don't have time to think about how their buildings might be more energy efficient, even when the programs are free, such as switching to energy efficient lighting and weatherproofing. Finally, the return on a high capital investment in energy efficient equipment, even when subsidized through EE programs like those that Franklin implements, is not good enough to justify a replacement. Some PMs that were interviewed said that when they did make investments in new equipment, the savings were much lower than what they were promised. This led to a general distrust of companies who offered EE programs and subsidies.

These and other insights that informed the design of a prototype based on four principles: 1) develop a property software (s/w)
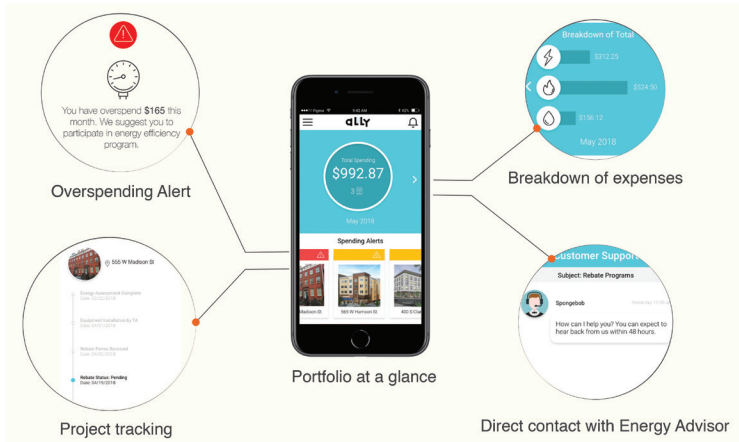
Figure 3: The multifamily Phase 1 prototype

that's free to PMs; 2) design the s/w to create a portfolio of all the properties with features to help the PM manage tasks and responsibilities; 3) allow for direct communication between energy analysts (EAs),[5] trade allies (TAs),[6] and PMs; and 4) visualize energy usage such that efficiency can be compared month-to-month, property-to-property, and property to adjacent properties. The s/w is not focused on EE but instead helps the PM manage more effectively, essentially making EE an aspect of portfolio management. Ally, the team's prototype, would be branded as a Peoples Gas product.

The Pass to Phase 2

The design solution proposed by the multifamily team was selected by Franklin Energy for further exploration and potential development. The scope of work included two main tasks: a market assessment to determine what products, if any, currently exist that are similar to Ally and developing plan for multifamily building manager engagement focusing on methods of outreach and relationship development. The scope of work was intended to incorporate task flexibility. Phase 2 was structured as a twelve-week practicum with a team of three designers from the Institute of Design graduate program and an Illinois Tech applied technologist. None of the team members had prior experience with the project.

This is an important aspect of this case, because it resulted in additional challenges in coordination and collaboration.

From the start of Phase 1, issues of complexity have been central to this narrative, particularly as they relate to two areas. The first being that designers are increasingly engaged in projects involving socio-technical systems. The second area is in multidisciplinary design research teams that provide diverse perspectives and modes of inquiry that allow for applying multiple lenses to explore complex problems. The role and importance of prototypes as forms of investigation were used to tease out and articulate the complex web of interactions between human and nonhuman actors. As boundary objects that create a shared space in which to negotiate understanding, prototypes assisted in the hand-off from Phase 1 and continued into Phase 2.

Phase 2 Process and Outcomes

The Phase 2 team began by mapping the landscape of low-income housing to understand how on-the-ground for-profit and nonprofit sector initiatives to implement EE were connected, funded, and monitored by state and federal entities in the affordable housing network. This was an essential stage in the learning curve for the team. While this effort doubled back to cover some of the secondary research done by the Phase 1 team, it added substantial depth to both team and client understandings of the overall context and allowed the team to pull back from a perspective focused on individual property managers. As illustrated in Figure 4, this resulted in scaling up to focus on key organizations in the affordable housing ecosystem including large property
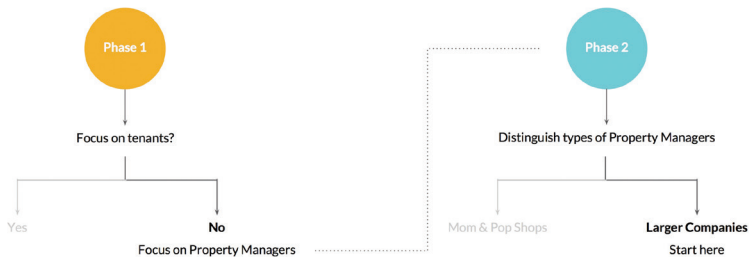

Figure 4: Transition to Phase 2

management organizations, the public sector housing authority that coordinate housing vouchers, and nonprofit organizations that play a role in driving EE in low-income neighborhoods.

Delivering a New Service Concept

Fieldwork in Phase 2 revealed that the lack of uptake among PMs for energy efficient initiatives, even when they were at no or low cost, was due in part to time constraints that are inherent in the job. Attempts to arrange interviews with PMs was next to impossible, due either to lack of time or lack of interest. As the Phase 1 team discovered, there is also a general distrust of programs offered by large utility providers or their contractors like Franklin Energy. The Phase 2 team recognized any proposed solution would need to address this trust deficit.

Interviews with Franklin EAs highlighted the deep expertise and extensive local knowledge of these individuals and revealed the substantial efforts that they devoted to outreach in low-income communities. Despite these efforts, overcoming the barriers to getting building owners and property managers to sign up for the assessment and to follow through with EA recommendations for specific energy saving offers remained problematic. Interviews with an energy analyst at the public sector housing authority, with large property management companies that serve low-income neighborhoods, and nonprofit organizations such as Seventhwave[7] and Elevate Energy[8] that also work with building owners and managers to promote EE yielded four key takeaways (see Figure 5). These insights provided a backdrop for understanding where opportunities to leverage Franklin's assets might exist.

After conducting research, the Phase 2 team held a workshop with members of the Franklin team to share and validate their findings and to ensure that information gaps were covered. The interaction among members of the Franklin team allowed them to gain a better understanding of how they might create greater synergy between their efforts. The in-depth interviews with Elevate Energy detailed how and why Franklin's nonprofit "competitor" was successful in reaching property managers and large property management companies. It also revealed where there were opportunities for Franklin to leverage its assets and capabilities.

Key takeaways from research

Understand Different Triggers

Triggers can be high utility bill trends, hiring for Energy Analyst role, building construction.
"Utility bills can tear your budget apart."

- Supervisor of Property operations, Paul G Center

Design for Different Values

"While utility companies think of EE as reducing energy, for people it is about cost saving, safety or making it fun. While for developers/owners it might be about retention. **Translating this is very important.**"

- Project manager, 7th Wave

Promote Open Communication

"What works well is keeping lines of communication very open with PM and to the extent needed with tenants. Everyone should know what is going on, and there is a **clear ownership of project aspects.**"

- Senior Energy Analyst, CHA

Make EE more Specific

"Rather than saying it saves so much energy, we would need a more integrated approach, that is designed for the **specific building versus average EE across buildings**"

- Energy & Sustainability Analyst, Pangea Properties

10

Figure 5: Key takeaways from Phase 2 research

In the final presentation, the Phase 2 team delivered a new service model that built on and extended the four design principles proposed in Phase 1's prototype, Ally. Research informed the design of a software platform that shifted the approach of the EAs from "push" to "pull," emphasizing continuous relationship building and personalized attention. The Phase 2 iteration, Ally 2.0, is a conceptual platform that connects EAs, PMs, and TAs across the property owner's journey to improve their relationships. The detailed service concept incorporates the "one-stop-shop" model of nonprofit competitors and leverages Franklin's assets, specifically, the expertise and deep local knowledge of Franklin's EAs and close relationships with TAs. Ally 2.0 was presented to the client in a final briefing along with a recommended set of next steps that would take Franklin into subsequent phases of the project.

CONCLUSIONS AND FUTURE DIRECTIONS

This case illustrates four key factors that contribute to the changing nature of contemporary design practice. First, the complexity of the sociotechnical systems such as energy distribution and consumption coupled with forces that are driving EE pose a formidable challenge to designers. As noted in AIGA Designer 2025, "Design challenges exist at the level of systems and involve elements and forces in constantly changing relationships." Meeting this challenge requires a more expansive and deeper competency

in rigorous design research. Second, the diversification of design into multiple subfields such as interaction design, service design, and design management tend to create silos at a time when multidisciplinary and cross-functional collaboration is critical. Third, multidisciplinary teaming is increasingly common in professional practice. Developing the competency to work across organizations and disciples requires a distinct set of skills, such as visual, written, and verbal communication, which can only be learned, rehearsed, and tested through extended opportunities in real-world practice. Preparing students to deal with complex working environments requires going beyond class-based projects to include practicums and longer client engagements and in-depth field research. These opportunities afford mutual benefits for students and client sponsors. Finally, designers today are challenged to address problems with scaling design-related activities beyond process.[9]

Accountability has entered the realm of design, accountability not only to clients but also to a wide range of social stakeholders. Increasing attention to the consequences of design artifacts and interventions, the environmental and cultural impacts of design, and issues of informed consent in interactive technologies and media are just a few of the areas in which accountability matter. As this case demonstrates, meeting these and other challenges of twenty-first century design practice requires a commitment to the ongoing re-evaluation of design education curricula and programs, not only for aspiring student designers but also for professional practitioners to upgrade their skills through a variety of opportunities, from seminars and workshops to formal courses. As we hope this case illustrates, designers that aspire to human-centered principles assume new responsibilities that include educating and informing clients about what it means to "do good design." To be successful in this role means defining these standards.

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4. Laas, K., Miller, C., Brey, E., Hildt, E. & Taylor, S. "Infusing Ethics in Research Groups: A Bottom-Up, Context-Specific Approach". In review. Advances in Engineering Education (2018).

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6. Trade allies (TAs) are independent contractors in the Franklin Energy network that provide sales and installation of equipment such as boilers. They might also provide services such as weatherproofing.

7. "Seventhwave is an independent nonprofit with offices in Chicago and Madison, Wisconsin. Our mission drives our passion to solve the toughest technical problems of the clean energy transition. Our research leads to real energy savings that reduce our climate impact. We share these results to inspire lasting change." www.seventhwave.org/about

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Cultural Responsibility in Design Research

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Keywords:
cultural responsibility, cultural sustainability, cultural appropriation, design research, design education

INTRODUCTION

Today's cultural unrest, both nationally and globally, has highlighted long-standing, systemic inequity marginalizing entire populations across industries and continents. As organizations and nations reckon with problematic histories, design too should reflect on its practices and responsibilities. Design outcomes, whether 2D, 3D, or experiential, impact consumers and—for better or worse—society. We use the phrases like "systems thinking" and "behavior change" to describe our work. Yet in a world rife with cultural discord, we can certainly do more to dampen harm and even facilitate harmony. Indeed, ongoing cultural appropriation by designers indicates that gaps in cultural awareness and accountability among designers are undermining cultural equity. Designers must embrace more cross-cultural research and intercultural dialogue within their work. Doing so can mitigate unintended negative design outcomes and even facilitate a more just society.

CONTEXT

The need for integrating cultural research into design processes becomes even more apparent when considering the demographics of the discipline. Despite rhetoric praising diversity's positive role in creativity and problem-solving, the profession lacks cultural diversity. And while designers are trained to empathize with end users/customers, responsible design demands consideration of the greater good of all society. According to the 2017 Design Census, 73 percent of designers surveyed identified as White, 9 percent as Hispanic, 8 percent as Asian, 3 percent as Black/African American, and 1 percent as American Indian/Alaska Native.[1]

While an improvement in terms of diversity over prior years, these demographics are still unrepresentative of the United States population. According to the US Bureau of Labor Statistics, the US population is 61 percent white, 18 percent Hispanic, 6 percent Asian, 13 percent Black, and 1 percent American Indian/Alaska Native.[2]

INCLUSIVE DESIGN RESEARCH

As empowered creative professionals, designers must consider their broad influence on cultural equity. Specifically, designers must consider cultural dynamics and evaluate the impact—whether intended or not—of design outcomes on cultural groups and systems. Practitioners must consider cultural representation, authenticity, authorship, and exchange when analyzing design narratives. And educators must teach these skills. The complexity of the sociocultural issues demands cultural research that is inclusive in both process and outcome. In light of design demographics, it also demands concerted effort.

This session addresses the role of design research within cultural contexts. It will focus on the integration of cultural research into the design process, rather than human resource practices. Key questions to be addressed include:

- How can design professionals and educators promote cross-cultural research and intercultural dialogue within design contexts?
- What common obstacles do designers face when doing so?
- What strategies, tactics, and resources have designers found useful to facilitate these activities?

CONCLUSION

By the end of the session, participants will have developed the foundation with which to guide their cross-cultural research and intercultural dialogue efforts. These benefits include:

- increased awareness and understanding of cultural issues pertaining to design and
- a portfolio of resources to facilitate cross-cultural research and intercultural dialogue.

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The Colliding Discourse of Cutting-Edge Design Practice and Serious Design Research

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Practice informing research and research informing practice is a virtuous cycle in any field. Ideally, researchers generate knowledge that industry practitioners apply, and then those practitioners identify needs or develop innovations that inform researchers' ongoing agendas. In design, we are far from achieving this goal. Designers' lingering pursuit for cutting-edge products is at odds with academic needs to produce serious research, and this tension inevitably affects design education.[1] Serious academic design research refers to rigorous approaches that follow systematic frameworks or methods that aim to generate design knowledge and develop theories that designers can use to inform evidence-based practice. It is the opposite of unsystematic research done in practice to make specific decisions. Typically, these results are not transferable to other design problems, but they are still useful to make informed decisions. Cutting-edge design practices refer to approaches that value novelty based primarily on the exploration of aesthetics, trends, and visual surprise, which leave other human needs such as understanding and usability a lesser priority.

The increasing disconnect between cutting-edge design practice and serious academic research poses problems for the future of design research and education. We suggest that a major cultural shift is necessary for design academia to both lead cutting-edge approaches and provide useful and visible knowledge. In this conversation at Decipher, we invited discussion on this topic in the context of three points: the value of cutting-edge trends in preparing future designers; the lack of exchange between academia and industry; and cultural shifts necessary to sustain the field.

First, the market, corporations, and designers value cutting-edge products that function as pledges for the future; consumers make purchasing decisions based on the appeal of external characteristics. Academic knowledge is cumulative and expected to have rigorous critical, theoretical, and historical support. As specific opportunities arise, however, industry develops design methods and trends ahead of design programs. How might this affect the preparedness of new professional designers to do truly innovative work?

Second, there is a perceived disconnect between practicing designers and academic design researchers in terms of dissemination. Industry magazines (e.g., *Communication Arts*) and professional conferences (e.g., How Design Live) appeal to designers through a focus on career-building as well as "taste-making and trend-spotting."[2] Scholarly journals (e.g., *International Journal of Design*) and research conferences (e.g., Design Research Society) are academic currency and established venues for serious peer-reviewed research. The former is more visible to the public while the latter tends to be exclusive and hidden within institutions. If academia and industry speak to themselves instead of each other, how might we publish or present academic design research to influence practitioner audiences?

Last, when compared with other academic disciplines, the design field is in its youth. In this context, the existing body of design knowledge is insufficient, and the quality and nature of education in design research varies greatly among institutions. This implies significant challenges for design research education not only at PhD and MFA levels but also at MA and undergraduate levels. This is a problem of knowledge generation as well as a problem of translation from basic knowledge to embedding this knowledge in designers' everyday work. Considering the institutional expectations of academia (regarding tenure, promotion, curricula, etc.), what are tangible ways to catalyze a shift in how we approach research and teaching?

This conversation was intended to provoke debate, and during the workshop, we presented these ideas and displayed some visual concepts to trigger responses. Figure 1 includes visual concepts that explain some distinctions between practice and research. In

Figure 1: Provocative distinctions between practice and research.

the bottom left, the graphic was useful to explain that some research activities are conducted within a practice-based project. For example, designers conduct in-depth interviews to understand better the users or the problem space, but the ultimate goal is to design a product or system. Also, some serious researchers may engage in practice; for example, designers may want to design prototypes that will be used to test a hypothesis or inquire propositions. Figure 2 shows examples of publication venues. This visual concept contrasts the publications aimed at practitioners and researchers and displays the poor connection between these two worlds. The distinctions shown in the visual concepts were not aimed to dogmatize design practice and research but to present defined categories as provocations to catalyze responses and rich discussion.

A number of participants reacted to the binary representation of the ideas. Some argued that some practitioners read research articles, and some researchers read design magazines. Also, some researchers that are more related to engineering paradigms would engage in designing with the goal of developing new applications or technologies, which would not necessarily respond to a practice-related design problem. The conversation, in general, unfolded on the clarification of ideas and concepts; therefore, there was limited time to propose clear responses to the questions posed. During the discussion, various viewpoints emerged from the participants: there should not be a distinction between practice and research; practice
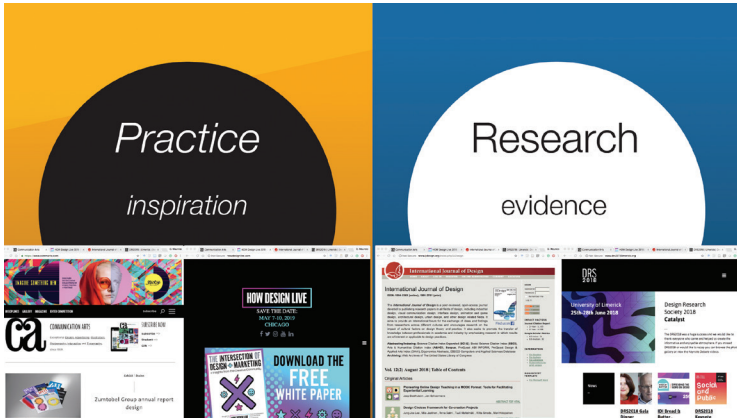
Figure 2: A distinction between publications targeted to practice and research.

is sometimes systematic; and researchers sometimes use their intuition. Participants recognized the relevance of the issue, but a solid consensus would require a broad discussion beyond this brief conference venue.

At the end of the Decipher conversation session, participants completed a questionnaire with three prompts. Selected responses are detailed with each of these questions below.

How do we do research that is ahead of design practices?

» Push an existing practice into a new space or new application in a reflective way that intends to observe and draw from what we are doing.

» Study design practices and suggest methods—name methods you see, develop and disseminate typologies of methods.

» Consider/use/explore new materials and come up with new ways of using them as practice-based research.

» Secondary research preceded design practices but continues through practice.

How do we disseminate research that reaches design practitioners?

» Workshops

» Publishing in places read by designers

» Collaborations

- » We frequently and broadly invite others to hear what we are doing while we are still "mid-question" so they can engage earlier and follow up on the outcome.

- » Simplify academic writing. In current form, it is exclusive enough to be intimidating. It keeps practitioners from reading.

- » Translational research

- » Make research more accessible.

How do we change design education to incorporate scholarly research?

- » Teach students how to do deeper design (not quite academic, but not 100% practical).

- » Be inspired to stay in touch with deeper knowledge.

- » As designers, most of what we do is research even though it may not be called that. "Scholarly" seems to make it something else, the "other." Is there a need for differentiation?

- » Teach design theory generation through design to increase exploratory power.

- » Teach cases of scholarly research and have discussion about what it is.

- » Develop more peer-reviewed journals in design.

- » Build tangible examples of theory.

The perspectives put forth by participants show that research in the context of design practice is not easily defined and vice versa. Perhaps the language we use to talk about these things may prompt more debate than by simply doing research and practice.

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Learning from Without: Redefining Design

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DEFINE DESIGN RESEARCH

With rising complexity of the issues faced by the world, design practitioners are acknowledging ways of designing that exist outside the formal formats of design. Design in the real world is often independent of formally trained designers. In India, craft is a means of production of objects of use; craft is not a do-it-yourself activity nor is it a hobby. The makers of objects of everyday use are not called designers, nor are the objects called designed objects. For the exhibit *The Fabric of India* at the Victoria and Albert Museum,[1] all designs showcased by designers were created by craftspeople, the names of which remain unknown. These craftspeople are at best acknowledged as makers of designed objects, as the skillful hands that translate the visionary ideations of celebrated designers. The issue here is not just about appropriation of skills of making, but negation of the repository of knowledge that the act of making and the makers bring in, through generations of engagement with the technique, material, and context.

In India, design action in the field of textile and fashion design has been pseudo-collaborative with making crafts in the sense that the designer brings in the context of the current market and a theoretical understanding of the craft technique and material use while using skilled craftspeople to actualize her idea. Often through dictates of the market, non-local new materials and culturally alien design language are introduced by the thinking-designer. Although a craftsperson has always had to incorporate newness to keep their craft relevant to the patrons and markets, they were traditionally slow to do so. In the last two decades, there has been a rise of craftsperson-training design schools that are meant to educate the

craftsperson in design vocabulary to make them independent of the designer. Yet, much like the formally college-educated designer, these artist-designer-craftspeople create one-off pieces and break away from their traditional contexts by introducing into their craft elements and materials that the market dictates and will appreciate.

Simultaneously, there is a steady decline in the numbers of traditional maker communities whose identities (caste hierarchy, symbiotic relationship with another community) were embedded in their making/craft practice either through material and contexts (environment, material availability) or technique, like cotton weavers, potters, leather workers, dyers, even darners. A reaction to the decline of makers is the rise of skill-upgradation and livelihood projects, supported by government, corporate social responsibility, and non-government organizations where new communities are taught making skills to translate ideas. Again, heralded by designers, these new maker communities are created as skilled labor to translate the ideas of the design community, independent of cultural context. The complexity and multiplicity of issues at work here require design research to engage more proactively in these contexts while working to create new formats of research to understand where these futures are headed and how to engage more meaningfully.

This rapid erosion of traditional formats of knowledge of making, the cultural repository of makers and contextual linkages that the traditional makers carried, is an issue of global concern. Designers are acknowledging the need to keep alive cultural heritages while valuing the knowing that is embedded in making within a context. Design research needs to expand to define and develop a more democratic format of co-design to work with communities not as empowered as the educated designer. Other disciplines like ecology, sociology, and anthropology[2,3,4,5,6] have recognized these issues and have tried formulating ways to work collaboratively with other practice-based knowledge systems and living contexts. Disciplines like architecture[7] and anthropology[8] have also questioned the politics and debate of hegemony of the thinking mind over the doing hand and through examples of experiential knowing in activities like basketry and bicycling have questioned this hierarchy.

Figure 1: Discussion with artisan-craftswomen to introduce them to market and aesthetical inputs. Photo by Laxmi Puwar.

CONVERSATION ON EQUITABLE DESIGN

The Decipher conversation provided a format for initiating discussions to find alternative ways of engaging with traditional makers when designing through them or in their contexts. This conversation was designed to initiate dialogue on equitable design. The main query being: Is Democratic design possible, not only in the cases of ideation but also at the stages of making and translation? The scope of this query was limited to the specific context of India, where craftsmanship is a means of production.

The small group of participants were asked to break down into smaller groups so as to create a more intimate setting for the conversation and have diversity in the conversation. Each group had on the table a few large sheets, some markers and Post-its, and printed visual cues. Once the participants were seated, the session was opened with introduction to craft practice as a means of production. Through a visual presentation, the participants were made aware of the facilitator's own context for raising such a conversation and her biases. The introduction to and discussion around the facilitator's work became an opening point of the conversation. The context was set by showing examples to explain craft as a production methodology. The facilitator located herself through working with craftspeople for production and teaching in craft schools (Figure 1). The methodologies here involved discussions with craftspeople on their understanding and design vocabulary to initiate new designs. The designer had also worked with craftspeople to translate her design visualizations to her specifications (Figure 2).

Figure 2: Working with craftsperson to translate designs. Photo by Priyanka Tolia.

	Craftsperson		**Designer**
Product	*Singular, handmade, unique object*		*Identical objects, mass production*
Material	*Engages with material in the process of giving it form*		*Understands the properties of materials and material-production method relation*
	Extensive knowledge of the related materials		
Process	*Dialogical/ dialectical process (includes both idea-concepts and form-concepts in the hand through making activity)*	**Craft as Means of Production**	*Conceptualization of form is separated between designing stage and making stage*
Prototype	*Prototype is the artifact*		*"Prototype" may be made to test design and production possibilities*

Table 1: Craft and design differences; the context of this research is located between the two.9

Each participant told her group members why she chose this conversation. The reasons people chose this conversation varied:

1) I have worked as a craftsperson doing letterpress printing; there is a time when you feel like a machine, which is a type of labor I did not expect when I began that job.

2) I am interested in power structures and hierarchies.

3) Several questions around "craft":

    a) Can a digital designer be a "craftsperson"?

    b) Is craft (ornamentation) taboo in "modern" design?

    c) Can we encourage local economies through craft even in urban settings?

    d) Do we know enough about how things are made?

4) I want to talk about democratic approaches in design.

    a) I care about design as a means to explore memories of marginalized communities. I see design/making as a form of self/collective expression which can help me understand memories that may not surface otherwise.

    b) I have so many questions:

        › How do we understand craft making?

        › How is embodiment present in craft making?

5) I am interested in design as conversation and I am interested in

    a) Making (technology)

    b) Makers

    c) Co-creation

    d) Designing for conversation

    e) Design as conversation

    f) Design as craft

It was evident in the opening remarks from the participants that design practitioners and design academicians around the world are also looking for methods to work toward more democratic forms of design and making. They are questioning the very meaning of the world craft and what it can signify. They are questioning cultural appropriation of practices and motifs of making that might be associated with the identity of a people. This set the context for the conversation.
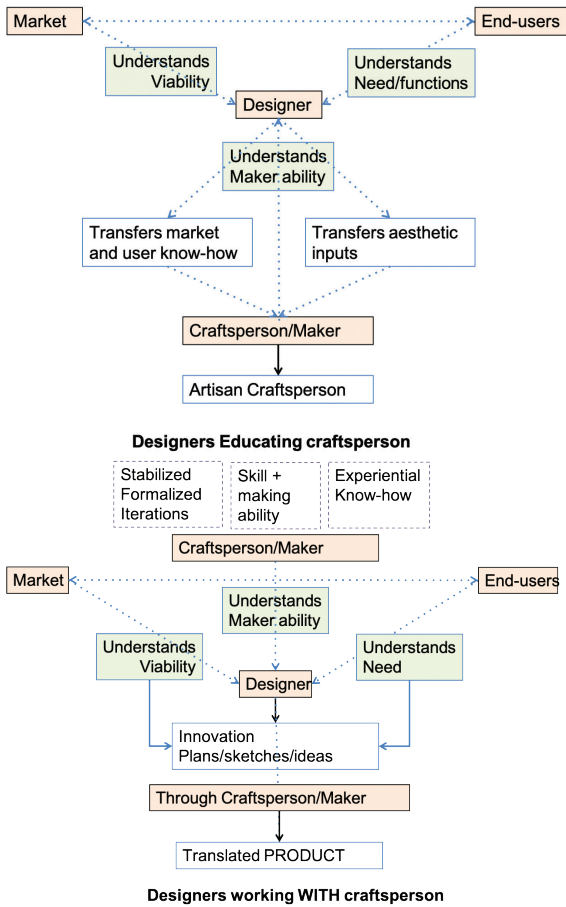
Figures 3 and 4: Frameworks locating the relationships of design and craft, as seen in practice.

The facilitator then presented frameworks derived from her own practice as a textile designer working extensively in the craft sector (Figures 3, 4). They were given as trigger models to explain the designer's action in the domain of culturally located makers, circulated to both groups and explained through presentation. Any reaction to these frameworks was to be captured through discussion and writing. The frameworks provided the participants a possibility of suggesting new models of interaction between the craftsperson and designer.
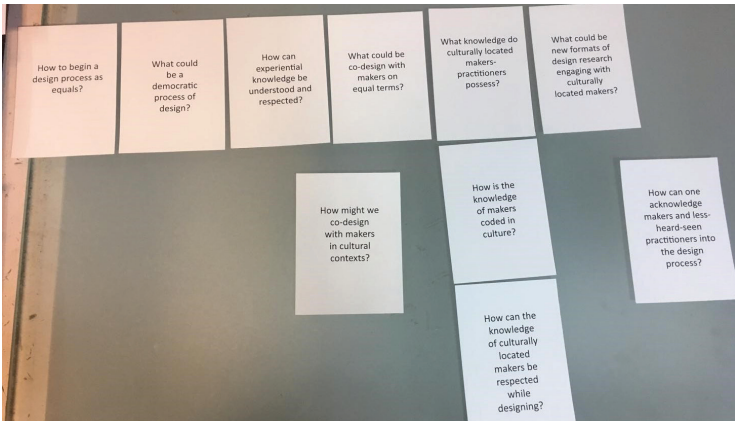
Figure 5: Cluster questions that came up while preparing for the conversation. Photo by Sucharita Beniwal.

Figure 6: Engaging in conversation over the trigger questions and responding individually. Photo by Sucharita Beniwal.

CONVERSATIONS

The conversation intended to define and elaborate the domain of democratic design in culturally located maker spaces and raise questions on need and ways of democratic design. A set of questions that designers, design-academics, and design-students need to ask in their practice were presented to the group.

> » What are the new formats of design research and co-design for engaging with maker communities that are culturally and contextually located?
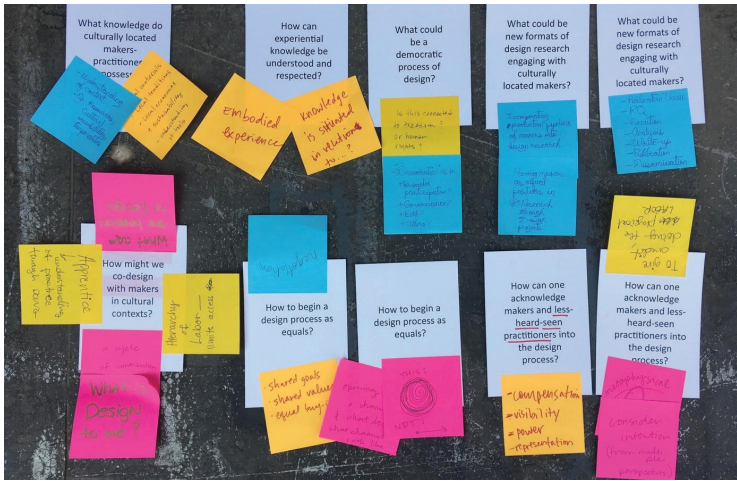
Figure 7: The trigger questions and answers and new questions that conversation brought out. Photo by Sucharita Beniwal.

» How are designers of tomorrow going to acknowledge and bring in makers, doers, as well as less heard or seen peripheral practitioners into a democratic process of design?

» What kind of knowledge do culturally located makers-practitioners other than designers, architects, artists, sculptors possess? These knowledges are not just the maker skills.

» How are these knowledges relevant to designers?

» What about these knowledges are coded in culture?

» How can design collaborate in more democratic terms with community- and culture-specific makers while respecting and drawing from their methodologies?

These larger questions on designer-craftsperson interaction were broken down to develop trigger cards that were presented to textile design students in India. Keeping in mind the constraints of time, ten questions were chosen (Figures 5, 6). The questions led to a certain clustering and also raised new questions (Figure 7). The Indian textile design students understood the context of craft and design from the frameworks the facilitator was approaching. Their responses led to more contextual responses associated with their

experience with craftspeople for production of their designs. They also suggested more contextual questions that could be added to the larger conversation. They suggested that the core of design action was hinged on one response: mutual respect.

These same questions were also presented to the participants at the Decipher conversation. The questions that were presented to the participants were open-ended to allow for greater inclusivity when conversing with a varied global group.

These questions lent a specific direction to the conversation and concentrated on moving toward conclusive direction toward equitable methods in design and design interaction with craft. The intention was to model the answers to find more actionable frameworks and methods for craftspeople/makers and designers to work together.

Design practitioners agree that there is experiential knowledge that making brings. Design and designer practitioners can understand this knowledge through bodily engagement with making and material.[10] With traditional maker communities this knowledge is embedded in the cultural context; it brings in aspects that can only be understood contextually and by the community. The discussion around cultural context reaffirmed that although experiential knowledge is embodied, new questions could be asked on the situatedness of this knowledge and the hierarchy of labor in which some have only limited access to this knowledge. A strong dimension of this knowledge is apprenticeship and understanding of practice through doing; an important space to explore is the cycle of contribution that designers can bring while finding formats of co-design in cultural contexts.

This research further wants to develop ways of design that allow the designer to work with traditional makers yet not create hierarchies of knowledge between the two paradigms of design action. These aspects become the central premise of this current design research, for understanding these knowledges will allow another way of engaging with the world and hence designing. The responses by the participants on trigger questions on designing as equals as well as acknowledgment of craftspeople and designers as equals were varied when considering that the two might not have
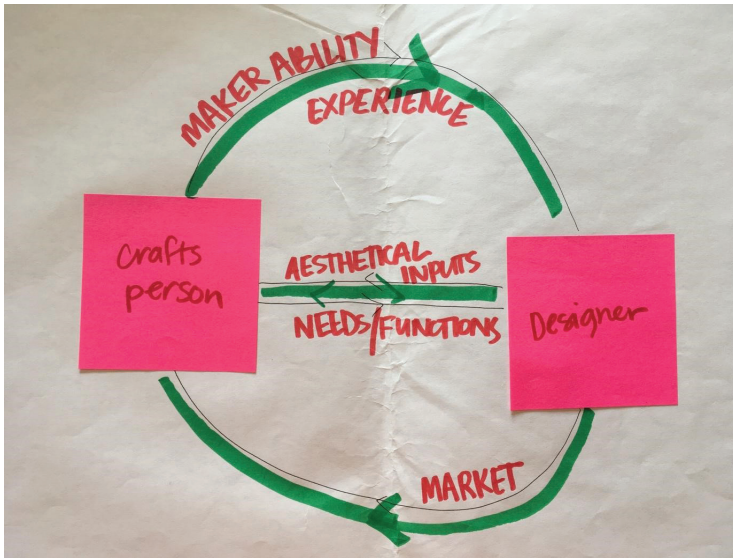
Figure 8: The ideal framework as developed by a participant in the conversation. Photo by Sucharita Beniwal.

shared goals and values, yet everyone should have equal proportion of compensation. It was understood that this required negotiation as a circular process and not a linear one. The conversation also revolved around sharing the power and considering intention of both parties from multiple perspectives. Equally essential was visibility and representation of both craftsperson and designer.

It was also discovered that some questions pertaining to democratic methods for design engagement were ambiguous and needed redefining. The questions also put forth certain biases of the facilitator as well as her unidirectional approach to the issue. Few trigger questions were unable to elicit any response from the participants. It was realized that these questions, although thought provoking, had few possibilities of responses and would need revisiting as they were extremely contextual.

LEARNINGS

The group held consensus on mutual respect as being the most important aspect that could lead to democratic design. It was discussed that only respect would allow new formats of engagement

between the craftsperson and designer. This led the participants to redefine the framework for action between craftsperson and designer. A participant reframed the ideal framework of mutual respect between craftsperson and designer (Figure 8).

The participants in this conversation came equipped with several questions around craft. Although their reasons for participating were varied, it was agreed that co-design is only a possibility once there is respect for forms of knowledges that non-designers bring to the design practice. The goal of the conversation was to address questions on more equitable formats in design between craftsperson-designer and therefore the design research in this area. The group articulated possible approaches for designers and craftspeople to have better co-designing experiences.

The conversation also gave raise to new questions and variables when one is discussing democratic forms of design. One important direction was to look at economics of craft equity because production is intertwined with earning a livelihood. The conversation could form a basis for developing pedagogy where future designers work in a more equitable manner with other culturally located makers. It will also inform future designers to ask relevant questions and find meaningful exchanges when they engage with craft practices and folk practices.

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Defining and executing a graphic design research agenda (if only for the sake of justice)

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Graphic Design Research, Doing Design Research, Tenure, Research
Agenda, Social Justice

"A journey of a thousand miles begins with a single step."

—in Tao Te Ching by Laozi

Within academia, particularly research institutions, graphic designers with terminal Master of Fine Arts degrees face a daunting requirement to do research to achieve tenure which can be all at once exhilarating, intimidating and confounding. However, starting the tenure process with a research agenda can ease these conflicting and often paralyzing feelings and set one's scholarly career on the path towards groundbreaking research that contributes new knowledge to one's discipline, qualifies one for tenure at a research university, and at the same time can even help to make the world a better place. In this paper, I proffer guidelines on how to develop a research agenda with anecdotal evidence from different phases of my tenure thus far in academia— from my probationary, tenure-track and tenured periods at a private, research university in the northeast to my current status as a tenured, full professor at a public, research university in the midwest.

BACKGROUND

I recall vividly the excitement that I felt securing a tenure-track position in graphic design at a research university over twenty-one years ago. As a graphic designer, with a terminal Master of Fine Arts (M.F.A.) degree, I had been formally trained in conceptual, visual design practice and had the opportunity to gain some professional experience applying my newfound knowledge to visually translating information into communicative, aesthetic, and meaningful outcomes. As to be expected at that time, the manifestations of my expertise and experience took form predominantly as corporate identity materials that aimed to sell brands, products, and ideas. However, in my new role then, in 1997, as a tenure-track, assistant professor at a research university, I began asking myself, with an extreme sense of urgency (and fright) as the six-year, tenure clock ticked seemingly faster and louder than the real clock on my office wall 1) What is research? 2) How does it differ from service and practice? 3) How do I do research? Where do I begin? What form(s) would (and should) the outcomes of my research labor take? Why should I even bother to engage in research in the first place?

The latter question seemed to dominate my thoughts so much so that I decided during this probationary, tenure-track period of my early scholarly career to depart academia and return to industry where I felt I could make a real difference in the world and my heritage community through the practice of graphic design. To my benefit (but, more importantly, and arguably, to the benefit of society), before actuating my decision, I expressed my resolve to a colleague, a social scientist who is also an anthropologist from another department at my institution. My colleague's response, in summary, was that pasteurization is theoretically-grounded—as is racism. The thought of a beverage that I drink daily as interfacing with theory and evolving from the scientific research of Louis Pasteur (Kurlansky 2018, 180) perplexed me. Moreover, that racism—something that I have experienced interpersonally and systemically—has been nurtured by theory (Gould 1996) left me equally bewildered.

As I am a naturalized American design scholar of Afro-Caribbean descent who grew up economically-disadvantaged in an inner-city in New Jersey, it became my mission at that point of my scholarly career to stay in academia and use research-generated theory to counter the legacy of racist theory with new findings that could lead to social justice. Adams and Bell (2016) defines social justice as the equitable participation of people from all identity groups in society in ways that address their needs; and Eglash (2016) extends this tenet by proffering "generative justice" which aims to facilitate equitable participation by members from all identity groups--particularly those underserved--in society's value creation ecosystem and returning value to their communities.

Today in society, instead of social justice or generative justice, one finds rampant, social injustices due in large part to the legacy of racist theory like the role of genetic determinism in learning (Geary 1994) that undermines the intellectual capabilities of people of color like me. Communities suffering injustices like this one can benefit from the attention and, more importantly, the research of graphic designers. Indeed, the future sustenance of society (humanity and the environment) depends on graphic designers being mindful of their role as co-stewards (with experts from other disciplines and the community) of social change by engaging in research.

THE EVOLVING NEED FOR GRAPHIC DESIGN RESEARCH IN SOCIETY

Historically, graphic designers have contributed abundantly to sustaining corporations rather than society—humanity and the environment—and, unfortunately, perpetuating the inequitable distribution of resources among people in society. Though we've seen some improvement since the Jim Crow and Civil Rights era, today we are still witnessing the unequal participation of diverse communities in the economic, intellectual, political, and social ecosystem we inhabit. Poverty, hunger, and poor education are some of the many perennial, challenges confronting global society.

Historically, The First Things First Manifesto (1964) issued a clarion call within the discipline to use graphic design's resources to better the world, followed by an echo over thirty years later with The First Things First Manifesto 2000 (1999). Subsequently, in a

thought-provoking article titled "Graphic Design: Fine Art or Social Science," Jorge Frascara implores graphic designers to pivot from graphic design as visual translation towards thinking more of graphic design as a social science (1988) and follows up with an in-depth discussions in "Design and the social sciences: Making Connections" (Frascara 2003). Many designers have followed through answering the call for more social-impact-focused-design by putting their expertise and the discipline's resources in service to non-profit organizations and other disciplines (e.g., health) that may be working for social and environmental good. In this role, though the graphic designer may use a visual research approach, the graphic designer still maintains the identity of being a visual translator of a client's (in this case another researcher's) information and data. Initiating one's own research-based inquiry enables the graphic designer to take on a leadership role that entails using one's design skills and knowledge to address societal challenges, like social injustices, by testing one's hypotheses; meeting scholarly objectives using qualitative, quantitative, and mixed methods available to researchers across disciplines; and authoring and visually translating their content for and in collaboration with target communities and multidisciplinary experts.

Whereas, historically, graphic design practice has had a lucrative career adding value to large corporate brands that tend to exploit humanity for corporate profit, the future work of graphic design research has the potential to do the opposite--it can engender equity in global communities, particularly those underserved and socio-economically challenged. Graphic design research that uses human- and user-centered research methods can fully realize its humanitarian potential when it collaborates with underserved communities in addressing social injustice. However, to do so requires input from a culturally diverse team of stakeholders that includes experts from different disciplines who have varied research methods and agendas. How do graphic designers engage in collaborative design research? What expertise do they bring to the collaboration? Within the partnership, how do they negotiate non-service roles? How do they lead interdisciplinary research teams and engage with diverse communities? How do they seek funding for multidisciplinary research? What new knowledge (if

any) do graphic designers need to participate in initiating their collaborative design research?

A GRAPHIC DESIGN RESEARCH AGENDA

One can begin to address the aforementioned questions through the development and execution of a research agenda--a plan of action to conduct research over a time period that includes the following components:

1) Topic
2) Research question
3) Hypothesis/Objective
4) Rationale
5) Theory
6) Methodology
7) Budget
8) Dissemination plan
9) Schedule

Table one operationalizes each of the aforementioned components of a research agenda with questions, tools, and sources in which to engage when developing a viable research plan of action that can bear fruitful outcomes, lead to an original contribution to one's discipline, and possibly make a positive impact on society. It is meant to serve as a starting point rather than an exhaustive guide.

Table 1: Developing a Research Agenda: Components, Questions, Tools, and Sources (continued on next page)

Components	Questions	Tools	Sources
Topic	Which issues in society interests you and why? Is there a challenge that you, a family member, or friend experiences that you might want to address through research?	Literature Review: What do we know about this topic? Which questions about this topic have been investigated previously? Informal observation of context	Broad array of materials including popular media, texts, journals, interdisciplinary peer review articles/journals, etc. Private and public contexts of life experiences
Research question	What specific question do you aim to address? Will answering it make an original contribution to knowledge? If your question aims to test a theory, can the question be answered with either yes or no? If so, then it is falsifiable.	Literature Review: What research has already been conducted in this area that can inform the development of your own research question?	Interdisciplinary peer review articles/journals
Hypothesis/ Objective	What do you propose as a solution or suitable outcome? Which graphic design resources can address the question? Who are the stakeholders affected by the question and what role can/will they play in answering the question?	Literature review; Creativity and informal/formal observation (through ethnography and fieldwork) and other qualitative, quantitative, or mixed methods approaches	Interdisciplinary peer review articles/journals A local or remote field site

Table 1: Developing a Research Agenda: Components, Questions, Tools, and Sources (continued from previous page)

Components	Questions	Tools	Sources
Rationale	Why is the question important? Why is answering it essential? Which community benefits from the answer and how?	Literature review: What existing facts or statistics show the significance of this line of inquiry or the anticipated outcomes.	Credible sources for statistics, facts (e.g. Pew Research Center; governmental or organizational research reports)
Theory	Which existing theory contributes to helping you understand the challenge or your hypothesis and scholarly objectives or directs you to an appropriate existing methodology or method for carrying out the research project?	Literature review: Which art, design, literary, marketing, social or humanities theories can inform this study?	Interdisciplinary literature on contemporary or classic theories that relate to your topic or can inform your question or your approach to answering the question
Methodology	Which methodology and methods are most appropriate for answering my question? What kind of data do you need to gather, generate, or review to address your question?	Literature review: Which past studies related to your study have been conducted? Which method(s) were used?	Sources: Refereed journal articles and informational reading on methods that are unfamiliar to you

Table 1: Developing a Research Agenda: Components, Questions, Tools, and Sources (continued from previous page)

Components	Questions	Tools	Sources
Budget	Where might/ will you apply for funding to support or enable your research?	Funding databases at your institution or within professional organizations; governmental funding databases	Government Private companies Crowdfunding Professional organizations internal and external to your discipline (e.g., Design Incubation)
Dissemination plan	What are the flagship, refereed journals, publishers, conferences for the publication and presentation of scholarly work in your discipline and related disciplines?	Academia, Researchgate, Google Scholar, Editing: Grammarly Writing: Scrivener, Writing groups	Journals and conferences in professional organizations within one's discipline and external to one's discipline

THINKING VERBALLY THROUGH THE DEVELOPMENT AND EXECUTION OF A RESEARCH AGENDA

In addition to the creative and visualization skills, graphic designers bring to scholarly research, another skill is writing. Graphic design educators regularly engage in academic writing to record their thoughts through journaling; develop their research agenda; explain the significance of it and its impact; propose research projects for funding through grants, fellowships, and awards and distinctions; and disseminate findings to conferences, journals, publishers, and other public venues. Throughout one's scholarly career, writing also serves as a problem-solving tool that can break down writing blocks and different kinds of cognitive and conceptual blocks and propel one through the research process towards the goal of attaining an emerging national and international reputation.

Speaking on the role of writing in the social science research process, Luker (2009) corroborates that "something magical happens when you write things down." Luker offers a writing exercise that entails 1) setting a timer to fifteen minutes and 2) reflecting in writing on a set of questions that include: "What question concerning the social world would you investigate if you knew you would not fail?" Luker further instructs to phrase responses as questions and with specificity. Although intended for classroom instruction, Luker's exercise can also be used as a self-ethnography activity early in one's scholarly career to generate a topic or question to research. Contributing a new perspective to an existing conversation in one's discipline requires the development of a specific question that by addressing it leads one to make an original contribution to one's discipline. Over time, a research question emerges at that sweet spot where one's iterative and diligent work on developing the research topic, hypothesis, rationale, and theory mesh and coalesce (Table 1).

Throughout my career thus far as a graphic design scholar with a terminal M.F.A. degree I've responded to my discipline's call for socially-conscious design by grappling with the following research questions: 1) Can the design of a multi-sensory font informed by non-verbal communication make reading more accessible for early readers? 2) Can we diversify the design of humanoid robots with dynamic, interactive aesthetics? 3) How do we design

a usable image for HIV/AIDS awareness and prevention in Kenya and Ghana? 4) Can heritage algorithms engender design agency in youth ethnically underrepresented in STEAM (science, technology, engineering, art, and mathematics) education? 5) Can interactive aesthetics, informed by theories of play and generative justice, relay to South African children good health habits? 6) How do we integrate research and cross-cultural literacy into applied graphic design curricula?

Isolating that single topic broad enough to immerse oneself in over the lifetime of one's scholarly career but specific enough to address in a research project can also begin with the development of a thesis during graduate study. For instance, as a graduate student, I became passionately interested in ways in which audience input could be included in the design process. My Master of Fine Arts (MFA) thesis in graphic design comprised a series of visual design projects that investigate creative ways of eliciting audience input during the interpretation of graphic art about cycles, time, and memory. In my thesis, I set out to explore how the target audience can be more active than passive in the communication of information using visual aesthetics. I designed a plethora of visual artifacts on cycles and memory that explored the role of the audience in the interpretation phase of the design process.

The scholarship I completed in graduate school informed my pre-tenure work that straddled theoretical and practice-based research. My applied inquiries ranged from internally and externally commissioned design projects and graphic art prints. In the latter, I set out to answer the following question: Can a two-dimensional graphic art print elicit audience input in the interpretation and production phases of the communication process? To address this question, I created a series of graphic art prints that graphically represented memory. I used personal images from my past interwoven with visual texture. As representations of my memories through the convention of a graphic art print, their meanings are ambiguous to the viewer. The viewer comes to the interpretation phase of a graphic art print and extracts meaning based upon their own cultural experience. My objective with these prints was to enable the audience to participate in the production or construction of the final form to

enhance meaning extraction. Therefore, I conceptually designed the prints to look and function like blueprints or schematics. When the viewer folds the sides in, the graphic print becomes its final three-dimensional form: a cube that represents one pixel of my life; a kind of subset in the matrix of memory, the numbered sequence of these "Containers" was thus coherent, but ambiguous enough to invite the readers' interpretation. This body of work confirmed that visual language and all of its embedded principles and strategies can evoke active participation from individual members of the target audience and formed the foundation for research on 'interactive aesthetics' (Bennett 2002)— the use of technology to mediate collaboration between professionals and the audience on a global scale for the sake of justice. My graphic art prints were accepted for inclusion in numerous, selective national juried exhibitions.

During my late pre-tenure through early post-tenure periods, I began to make connections between my interactive aesthetics concept and work in other areas like diversifying STEM, socio-cultural robotics, early childhood literacy, and global food. Consequently, the form of dissemination of my findings post-tenure thus pivoted to take form primarily as papers for refereed conferences and journals; chapters for edited collections; and as manuscripts for submission to leading book publishers in my discipline. However, scholarship in graphic design research can take other forms. For instance, the College of Design at the University of Minnesota uses the design scholarship matrix in Figure 1 that comprehensively shows different types of scholarly outcomes and impact measures that can count towards promotion for tenure and full professor at the University of Minnesota. One can compare this collection with the tenure and impact requirements at one's institution in consultation with a mentor and supervisor to determine the institution's scholarly requirements for tenure.

Design scholarship matrix
(can be applied sequentially from left to right columns, and non-sequentially with different entry points)

Effort [1, 2]	Product [3]	Selection process [5]	Dissemination [7, 8, 9]	Impact [10, 11]
Designing, writing, editing, developing, curating, researching, creating, interviewing, applying, prototyping, analyzing, evaluating, consulting, directing, etc.	Design[4], article, paper, book, chapter, report, invention, presentation, artwork, media work, product, exhibit, grant application, workshop, etc.	Peer-reviewed, juried, blind reviewed[6], editor reviewed, invited, nominated, crowd-sourced, competitive, self-initiated, commissioned, critical evaluation, etc.	Publication, exhibition, conference, collection, presentation, popular press, symposium, performance, broadcast, marketplace, patent, workshop, etc.	Citations, collections, awards, number of viewers/users/visitors, funded, licensing, media attention, legislation, regulation, human welfare, policy, environmental impact, quality of life, commercial success, other evidence
1. Consideration of role if collaborative scholarship 2. Consideration of relationship to core discipline if interdisciplinary or extra-disciplinary	3. The product is tangible and/or retrievable 4. Designed work can be: object, image, experience, interaction, performance, service, environment, etc.	5. Consideration of acceptance rate if known 6. "Blind reviewed" refers to anonymity between reviewer and submitter, and can apply to selection criteria beyond journal articles, such as juried exhibits and competitions	7. Consideration of reputation or ranking of venue or publication if known 8. If exposed to different audiences, works can be disseminated in multiple venues (i.e. traveling exhibits, different jurors) 9. includes in print and online, and analog and digital formats	10. Consideration of scope (local, regional, national, international) if known 11. Consideration of impact factor

Figure 1. University of Minnesota, College of Design's Design Scholarship Matrix. (Courtesy Steven McCarthy, Professor, College of Design, University of Minnesota)

THINKING METHODOLOGICALLY THROUGH THE DEVELOPMENT AND EXECUTION OF A RESEARCH AGENDA

Embracing social issues in one's research typically means confronting wicked problems that affect individuals and communities on a global scale. These wicked problems are complex challenges because they cross cultures and are interdisciplinary in scope. Thus, addressing them in ways that improve the lives of those affected require a design process that is 1) inclusive of stakeholders with different intellectual, cultural, disciplinary, political, and economic backgrounds and 2) engages them, ethically, in the process of thinking through the challenge and making decisions that lead to the derivation of viable outcomes that contribute to a "wicked solution" (Bennett 2013) directed towards attaining justice. This design process is contrary to the conceptual and intuitive approaches to graphic design that I learned in graduate school. The questions that I have aimed to address in my scholarship are interdisciplinary and intercultural in scope and thus require an ethical approach, the input of different stakeholders including members of lay and disciplinary communities, and a research methodology.

The questions of what constitutes a methodology and how a methodology differs from a method are addressed comprehensively by O'Leary (2017) among other related sources. Generally, one's choice of approach should be informed by the question, intuition and judgment, and previous, peer-reviewed studies of the same problem. It is imperative that the researcher conducts a literature review to glean insight on how other scholars have gone about addressing similar or related questions. In research, you are at all times standing on the shoulders of giants. Which methodologies and methods did they use? What were their findings? (Table 1) A literature review I conducted early in my career led me to the understanding that designers were conducting research as early as the Bauhaus and that contemporary designers were engaging in more collaborative approaches to designing to address social issues that included user-centered design (Frascara 1997) and participatory design (Shuler and Namioka 1993). My findings from this literature review populated a collection that I edited titled "Design Studies: Theory and Research in Graphic Design" (Bennett 2016).

Engaging with scholars from other disciplines in joint research, one may even get experience using methodologies and methods that fall outside of design. Also, these interdisciplinary collaborations can provide access to funding that can drive research objectives forward. Funding enables the researcher to put chosen methods into action to address the research question(s), carry out and meet objectives or test hypotheses. More importantly, though, it allows the research project to move forward to dissemination. Sources of funding include private companies and foundations, governmental funding, fellowships, and even crowdsourcing—all of which counts towards promotion in academia. In my research, funding enabled me to serve as a co-principal investigator on a multi-million dollar funded research project in which I study interactive aesthetics and health and education on a global scale, conducting fieldwork in Ghana, South Africa, and Kenya.

THINKING VISUALLY THROUGH THE DEVELOPMENT AND EXECUTION OF A RESEARCH AGENDA

The beginning of a research agenda starts with the first step— determining a topic—followed by an iterative process of moving

through the other components of the research agenda (Table 1) consecutively in an overlapping way with many tasks within each component co-occurring (Table 2).

Table 2: A proposed timeline for developing and executing a research agenda that reflects typical schedules for the third-year and sixth-year reviews leading to a tenure decision.

Year	One	Two	Three: 3rd Year Review	Four	Five	Six: Tenure Review
Topic	■					
Research question	■					
Hypothesis/ Objective	■					
Rationale	■					
Theory	■					
Methodology		■	■	■	■	■
Budget	■	■	■	■	■	■
Dissemination plan		■	■	■	■	■

CONCLUSION

This approach to defining and executing a research agenda is based on an autoethnographic look at one M.F.A. graphic design scholar's experience at a research university over a twenty-one-year period. Other experiences likely exist, and more opportunities are needed in the discipline to compile those perspectives to delineate a clear path to tenure for graphic designers at research universities. At Decipher, a burning question from participants in this activity session was how to get funding for one's research. This paper proffers that pursuing graphic design for social justice can lead to interdisciplinary collaborations that attract lucrative funding opportunities. However, more training in proposal writing and development is needed in graduate school curricula to prepare graphic designers for the budgetary challenges they will confront during the probationary period of their scholarly careers.

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